



## Workshop Manual

Fox 2010 ➤

Fox 2014 ➤

SpaceFox 2011 ➤

**Electrical system**

Edition 12.2016



## List of Workshop Manual Repair Groups

### Repair Group

- 27 - Starter, current supply, CCS
- 90 - Gauges, instruments
- 92 - Windscreen wash/wipe system
- 94 - Lights, bulbs, switches - exterior
- 96 - Lights, bulbs, switches - interior
- 97 - Wiring



Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.





## Contents

<b>27 - Starter, current supply, CCS</b>	<b>1</b>
1 Battery	1
1.1 Battery A - disconnect and connect	2
1.2 Battery A - remove and install	6
1.3 Battery A Console - remove and install	9
1.4 Tightening torques - Battery	10
2 Starter	11
2.1 Starter B - remove and install	11
2.2 Starter B (Manufacturer Valeo) - disassemble and assemble	12
2.3 Starter B (Manufacturer Bosch) - disassemble and assemble	16
2.4 Fox Bluemotion 3-cylinder EA211 engine starter motor - remove and install	27
2.5 Tightening torques - Starter	28
3 Alternator	29
3.1 Generator (Alternator) C - cable fastening (B+)	29
3.2 Generator (Alternator) C - check Poly-V belt	30
3.3 Generator (Alternator) C for 1.0 and 1.6 liter engines - assembly overview	30
3.4 Generator (Alternator) C - replace the Poly-V belt pulley	36
3.5 Voltage regulator C1 (Manufacturer Bosch) - disassemble and assemble	38
3.6 Voltage regulator C1 (Manufacturer Valeo) - disassemble and assemble	39
3.7 Tightening torques - Alternator	41
<b>90 - Gauges, instruments</b>	<b>42</b>
1 Combined instrument	42
1.1 Locating defects and indicating faults	42
1.2 Combined instrument K - replace	43
1.3 Combined instrument K - remove and install	44
1.4 Combined instrument K - description of rear part	46
1.5 Combined instrument K - pin assignment	47
1.6 Combined instrument K - control light symbols	48
2 Service interval indication	50
2.1 Service interval indication - reset to zero	50
3 12 Volt socket	51
3.1 12 volt socket U5 - assembly overview	51
3.2 12 volt socket U5 - remove and install	51
3.3 Electric socket 2 - 12V U18 (Fox/Crossfox) - assembly overview	54
3.4 Electric socket 2 - 12V U18 (Fox/Crossfox) - remove and install	54
3.5 Electric socket 2 - 12V U18 - replace	55
3.6 Electric socket 2 - 12V U18 (Spacefox/Suran - version 1) - assembly overview	57
3.7 Electric socket 2 - 12V U18 (Spacefox/Suran - version 1) - remove and install	57
3.8 Electric socket 2 - 12V U18 (Spacefox/Suran - version 2) - assembly overview	60
3.9 Electric socket 2 - 12V U18 (Spacefox/Suran - version 2) - remove and install	60
3.10 Electric socket 2 - 12V U18 - replace	61
<b>92 - Windscreen wash/wipe system</b>	<b>63</b>
1 Windscreen wiper system	63
1.1 Windscreen wiper system - assembly overview	65
1.2 Windscreen wiper blade (version 1) - remove and install	65
1.3 Windscreen wiper blade (version 2) - remove and install	66
1.4 Windscreen wiper blade and arm set - remove and install	66
1.5 Windscreen wiper mechanism - remove and install	69
1.6 Windscreen wiper motor V - disassemble and assemble	69
1.7 Windscreen wiper blade resting position - adjust	71



1.8	Blade application angle on windscreen - adjust	71
1.9	Rain and light sensor G397 - remove and install	72
2	Windscreen washer system	75
2.1	Windscreen washer system - assembly overview	75
2.2	Reservoir for the windscreen and rear window washer system - remove and install	76
2.3	Windscreen washer pump V5 and/or Rear window washer pump V13 - remove and install	77
2.4	Windscreen washer system spray nozzles - replace	78
2.5	Windscreen washer system spray nozzles - adjust	78
3	Rear window wiper system	80
3.1	Rear window wiper and washer system - assembly overview	80
3.2	Rear window wiper arm - remove and install	81
3.3	Rear window wiper motor V12 - remove and install	82
3.4	Rear window wiper blade resting position - adjust	83
3.5	Rear window wiper blade - remove and install	83
4	Rear window washer system	85
4.1	Rear window washer system - assembly overview	85
4.2	Rear window washer system spray nozzle - replace	86
4.3	Rear window washer system spray nozzle - adjust	87
94	Lights, bulbs, switches - exterior	88
1	Main headlights	88
1.1	Main headlights - assembly overview	88
1.2	Main Headlights - remove and install	90
1.3	Main headlight lamps (single) - replace	90
1.4	Main headlight lamps (twin) - replace	92
2	Fog lights	95
2.1	Fog lights - assembly overview	95
2.2	Fog lights - remove and install	96
2.3	Auxiliary headlights (CrossFox / Space Cross / Suran Cross) - assembly overview	97
2.4	Auxiliary headlights (CrossFox / Space Cross / Suran Cross) - remove and install	98
3	Headlights - check adjustment	101
3.1	Check headlight adjustment (with the new inspection display without 15° adjustment line).	102
3.2	Headlights - adjust	103
4	Side indicator lights	106
4.1	Side indicator lights incorporated to external rear-view mirrors	106
5	Tail lights	107
5.1	Tail lights (Fox/Crossfox) - assembly overview	107
5.2	Tail light (Fox/Crossfox) - remove and install	108
5.3	Tail light lamp support (Fox/Crossfox) - disassemble and assemble	109
5.4	Tail lights (Spacefox/Suran) - assembly overview	109
5.5	Tail light (Spacefox/Suran) - remove and install	110
5.6	Tail light lamp support (Spacefox/Suran) - disassemble and assemble	112
5.7	Centre tail light "rear lid" (Spacefox/Suran) - remove and install	112
5.8	Left rear fog light lamp L46 (Spacefox/Suran) - replace	113
6	Fog lights	114
6.1	Tail fog light (Fox/Crossfox) - remove and install	114
6.2	Tail fog light lamp L20 (Fox/Crossfox) - replace	114
7	License plate light	116
7.1	License plate light (Fox) - remove and install	116
7.2	Number plate light X (Fox) - replace bulb	117
7.3	License plate light (CrossFox) - remove and install	117
7.4	License plate light X (Crossfox) - replace lamp	117
7.5	Number plate light (Spacefox/Suran) - remove and install	118



7.6	License plate light X (Spacefox/Suran) - replace lamp	118
8	Additional brake light	119
8.1	Auxiliary brake light - remove and install	119
9	Switch set	121
9.1	Direction and wiper switches / glasses washer (version 1) - remove and install	121
9.2	Direction and wiper switches / glasses washer (version 2) - remove and install	122
9.3	Connectors pinout in the switch set for turn lights and window wipers/washers	123
10	Steering lock set	124
10.1	Steering lock set - remove and install	124
11	Ignition/starter switch and key cylinder	126
11.1	Key cylinder - remove and install	126
11.2	Ignition/starter switch D - remove and install	128
11.3	Ignition switch D - pinout	128
12	Auxiliary parking system	129
12.1	Locating defects and indicating faults	129
12.2	Auxiliary parking system - assembly general view	130
12.3	Control unit for parking aid J446 - remove and install	131
12.4	Warning buzzer for rear parking aid H15 - remove and install	132
12.5	Parking aid sensor - remove and install	133
<b>96</b>	<b>Lights, bulbs, switches - interior</b>	<b>137</b>
1	Internal lights and switches	137
1.1	Cabin surveillance deactivation switch E267 - remove and install	137
1.2	Dashboard switches - remove and install (version 1)	138
1.3	Dashboard switches (vehicles without radio) - remove and install (version 2)	139
1.4	Dashboard switches (vehicles with radio) - remove and install (version 3)	139
1.5	Light switch E1 - remove and install	140
1.6	Glove compartment light W6	141
2	Front door lights and switches	142
2.1	Door contact switches - remove and install	142
2.2	Front/rear window drive switches and window lock switch - remove and install	143
2.3	Rear-view mirror adjustment switch E43 with Switch for rear-view mirror adjustment E48 - remove and install	144
2.4	Driver side interior locking switch E150 - remove and install	145
3	Lights and switches in luggage compartment	146
3.1	Luggage compartment lighting switch F5 - remove and install	146
3.2	Boot light W3	147
4	Roof lining lights and switches	149
4.1	Internal front light W1	149
4.2	Internal front light W1 with reading light	151
4.3	Internal front light W1 with sun roof	154
4.4	Make-up mirror lighting - remove and install	156
4.5	Rear reading light W11 and/or W12 - remove and install	157
5	Horns	159
5.1	Treble tone horn H2 - assembly overview	159
5.2	Horn plate H	161
6	Immobilizer	162
6.1	Immobilizer control unit J362 - replace	162
6.2	Immobilizer reading coil D2 - remove and install	162
6.3	Ignition key - variable code transponder	162
6.4	Ignition key - adapt to immobilizer	162
6.5	Ignition key - replace battery	162
7	Alarm System	163
7.1	Locating defects and indicating faults	163



7.2	Anti-theft alarm system - activate and deactivate	163
7.3	Ultra-sound sensor for alarm system G209 - remove and install	164
7.4	Alarm system horn H8 - assembly overview	165
97	Wiring	168
1	Fuse and relay support	168
1.1	Fuse and relay support - remove and install	168
2	Coupling stations and engine compartment bellows lid	169
2.1	Coupling station on A-pillar - assembly overview	169
2.2	Coupling station on B-pillar - assembly overview	170
2.3	Boot cover on engine compartment partition panel - remove and install	170
3	Fuse box	171
3.1	Fuse box - remove and install	171
4	Control units	177
4.1	Central control unit for the convenience system J393	177
4.2	Control unit of lights with windscreen wiper functions J917 (Coming Home/Leaving Home)	178
4.3	Central control unit for window activation J1015 (ZFH)	180
4.4	Control unit for the on-board system J519 (BFM)	180
4.5	Control unit for the on-board system J519 (BCM)	183





## 27 – Starter, current supply, CCS

### 1 Battery

(VRL009869; Edition 12.2016)



#### WARNING

*Risk of injuries! Observe safety warnings and instructions ⇒ General information; Rep. gr. 27; Starter, alternator, battery.*



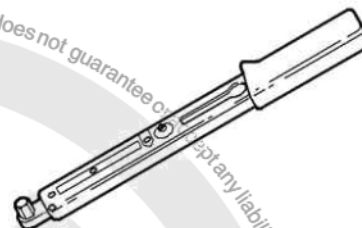
#### Note

- ◆ Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .
- ◆ The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).
- ◆ When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.

Special tools and workshop equipment required

- ◆ Torque wrench - 5 to 50 Nm (fit. 1/2") - VAG 1331-

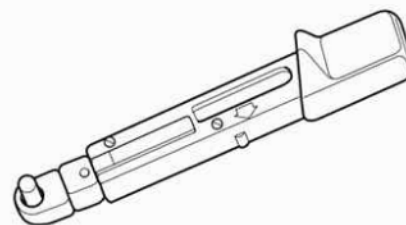
V.A.G 1331



Q00-10065

- ◆ Torque wrench - 4 to 20Nm (fit. 3/8") - VAG 1410-

V.A.G 1410



Q00-10086



## 1.1 Battery -A- - disconnect and connect

### 1.1.1 Disconnect



#### WARNING

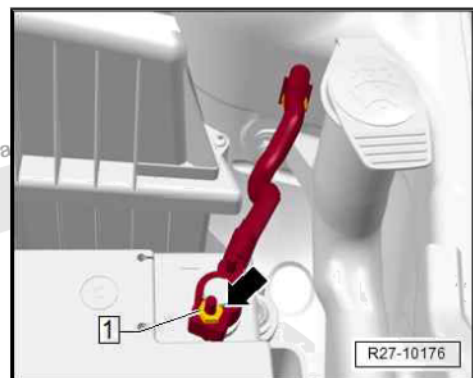
*To avoid risks of accidents, always first disconnect the terminal connected to the negative pole of the Battery - A- .*

*The Battery - A- earth wire fastening should not be removed from the vehicle body.*

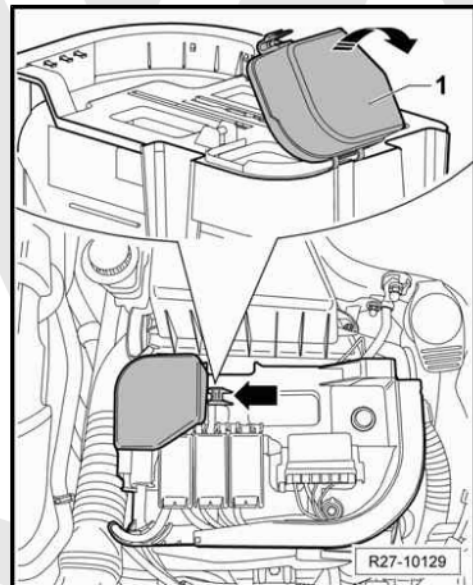
- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Loosen the securing nut -arrow- and remove the earth wire terminal -1- from the negative pole of the Battery - A- .

Continuation for:

Fuse box support (version 1):



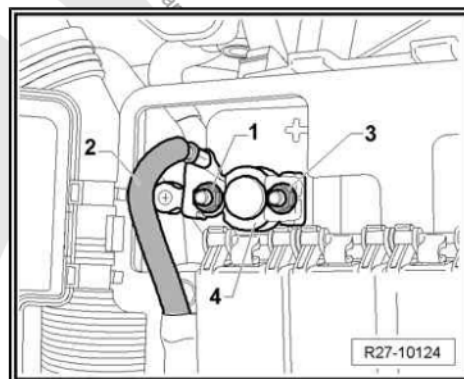
- Press the retaining clip -arrow- and tilt the positive battery pole cover -1- on Battery - A- .



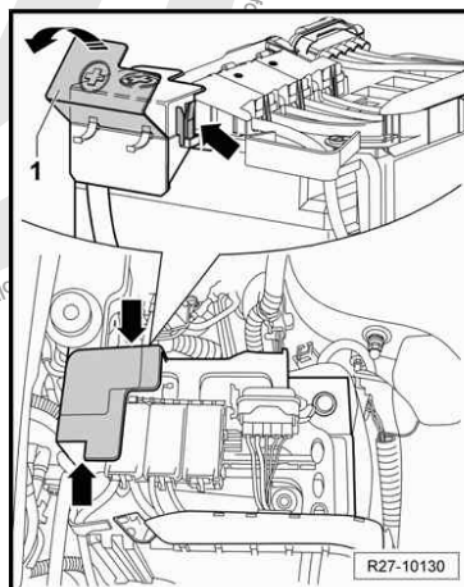


- Loosen the securing nut -1- and remove the positive cable terminal -2- from the fuse box.
- Loosen the securing nut -3- and remove the positive cable terminal -4- from the Battery - A- .

Fuse box support (version 2):

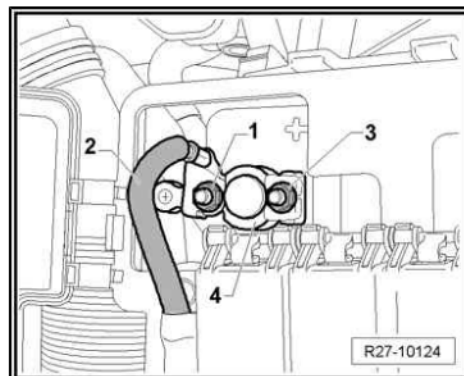


- Press the retaining clips -arrows- and tilt the positive battery pole cover -1- on Battery - A- .

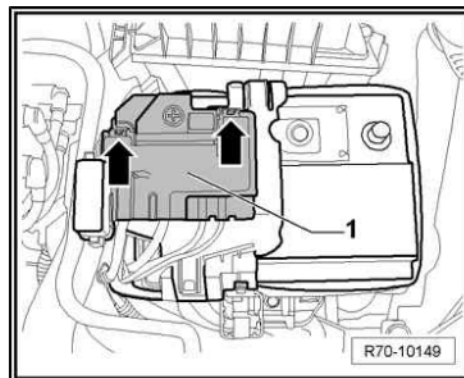


- Loosen the securing nut -1- and remove the positive cable terminal -2- from the fuse box.
- Loosen the securing nut -3- and remove the positive cable terminal -4- from the Battery - A- .

Fuse box support (version 3):



- Press the retaining clips -arrows- and tilt the Battery - A- positive pole cover -1- upwards.



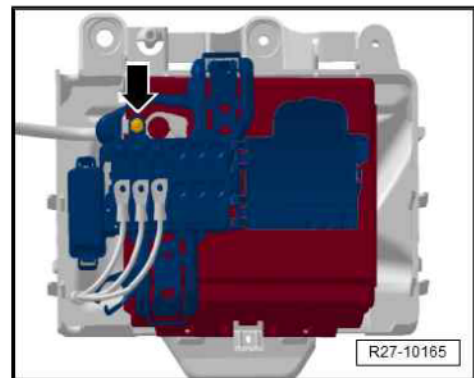
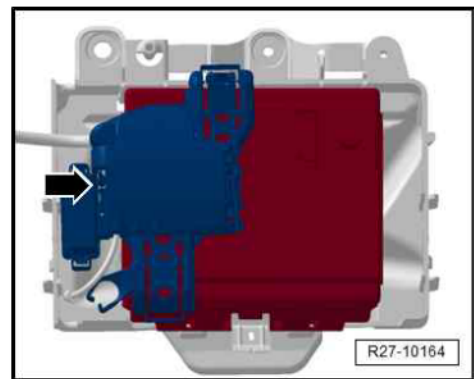
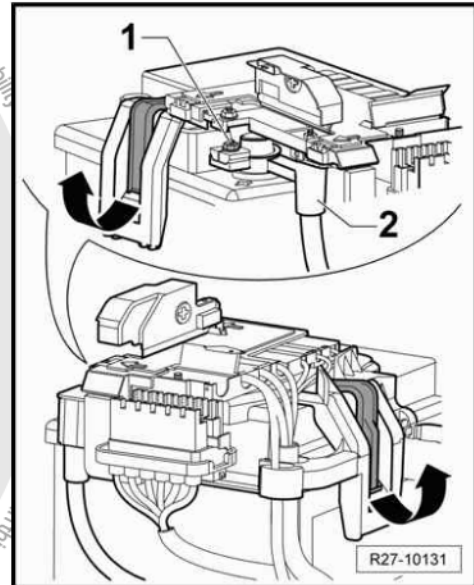


- Loosen securing nut -1- from positive wire -2-.
- Loosen fuse box support fastening locks, removing them along with the positive cable -2-.

Fuse box support (version 4):

- Press the retaining clip -arrow- and tilt the positive Battery - A- pole cover to the right.

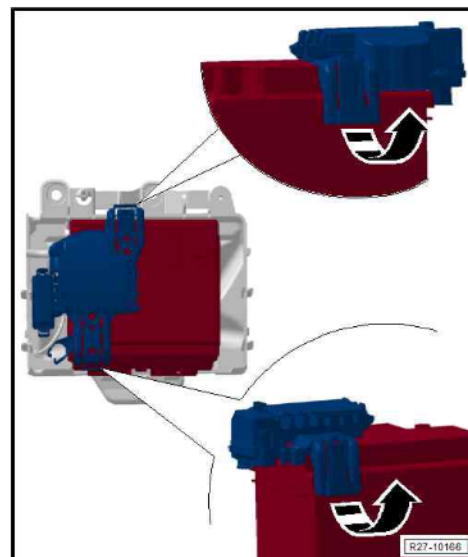
- Remove the fastening nut -arrow-.



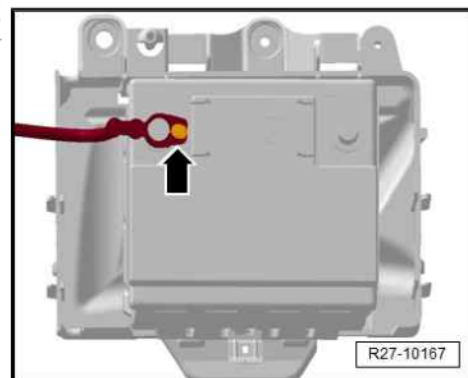




- Loosen the locks towards the -arrows- support.



- Loosen the tightening nut -arrow- and remove positive cable pole terminal (positive pole).



### 1.1.2 Connect



#### Caution

*Please observe the notes on the Battery - A- terminal securing bolt⇒ General information; Rep. gr. 27 ; Starter, alternator, battery .*

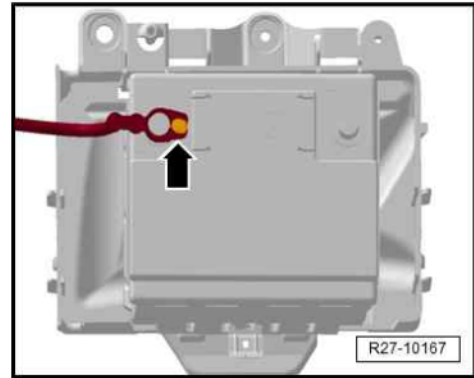


#### Note

- ◆ *The poles of Battery - A- should not be lubricated.*
- ◆ *Connect the Battery - A- pole terminals manually, without forcing them, in order to prevent damages to the Battery - A- housing.*
- ◆ *When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*
- ◆ *Before carrying out measurements, check the external conditions and the connections of the Battery - A- .*



- Fit the positive wire terminal to the positive Battery - A- pole and tighten the fastening nut -arrow- to the specified tightening torque ➔ [page 10](#) .

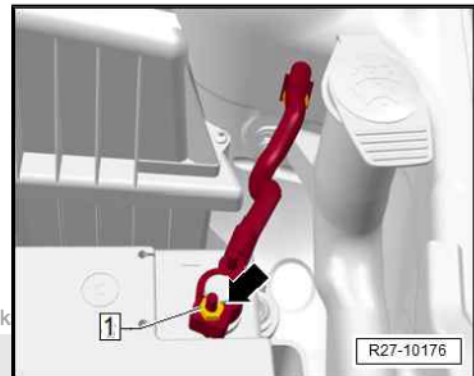


- Insert the earth strap terminal into the negative pole of the Battery - A- and tighten the fastening nut -arrow- to the specified tightening torque ➔ [page 10](#) .



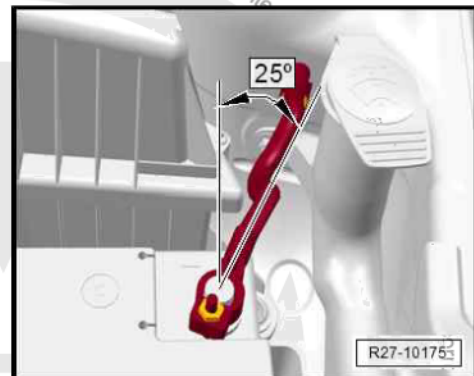
**WARNING**

*The terminal must be positioned in a 25° angle, in order to avoid tensioning the negative cable.*



**WARNING**

*If the terminals are not firmly secured to the Battery - A- , poles, the terminal connected to the negative pole of the Battery - A- must be disconnected first, to avoid risk of accidents.*



## 1.2 Battery -A- - remove and install



**Note**

*To remove the Battery - A- , it is not necessary to disassemble the fuse box, just move it aside, respecting the cable clearance.*

### 1.2.1 Removal

- Turn off the ignition, all the electrical devices and remove the key from ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Remove and move the fuse box away until there is enough space to remove its support (different versions).



Continuation for:

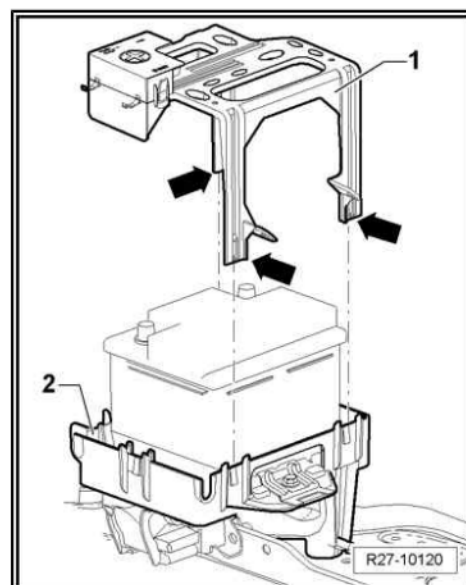
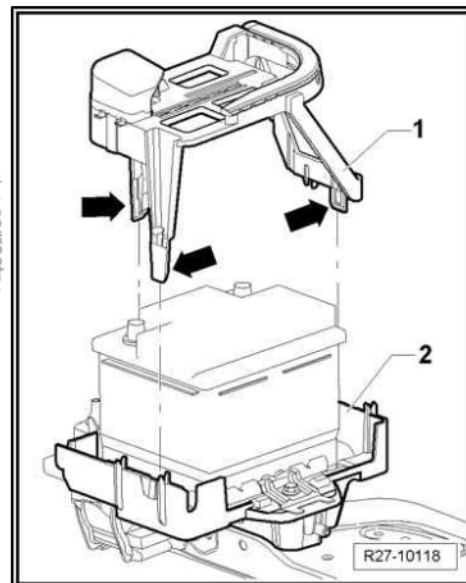
Fuse box support (version 1):

- Release the retaining clips -arrows- and remove the fuse box carrier -1- from Battery - A- console-2-.

Fuse box support (version 2):

- Release the retaining clips -arrows- and remove the fuse box carrier -1- from Battery - A- console-2-.

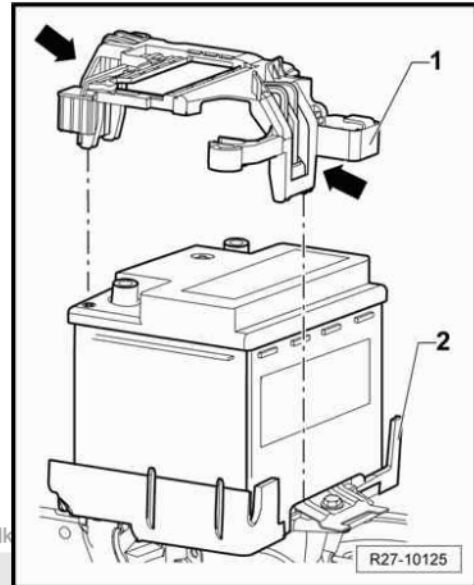
Fuse box support (version 3):





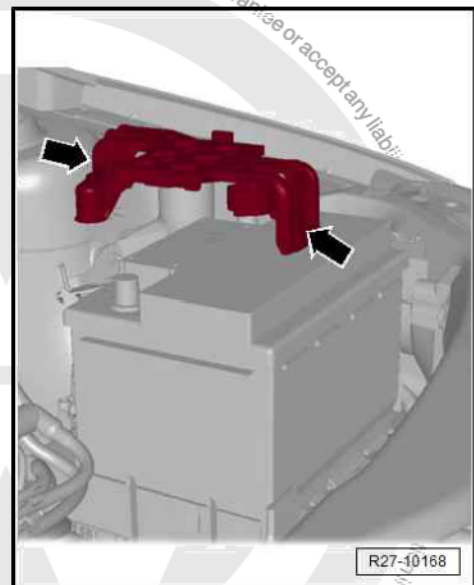
- Release the retaining clips -arrows- and remove the fuse box carrier -1- from Battery - A- console-2-.

Fuse box support (version 4):

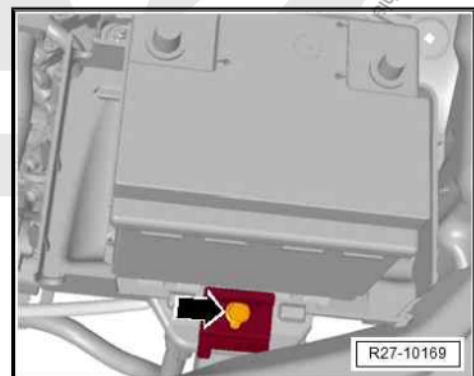


- Unlock the locks -arrows- and remove the fuse holder support Battery - A- .

Continuation:



- Remove the securing bolt -arrow- and the fastening plate of the Battery - A- .
- Remove the Battery - A- from its housing.

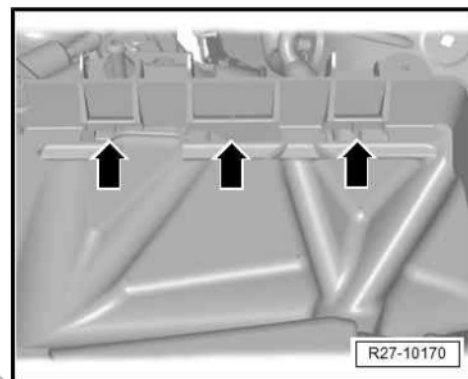


## 1.2.2 Installation

Installation is performed in reverse sequence to that of removal, observing the following:



- Install the Battery - A- so that the Battery - A- base frame fits below the support projections -arrows- of the Battery - A- tray.

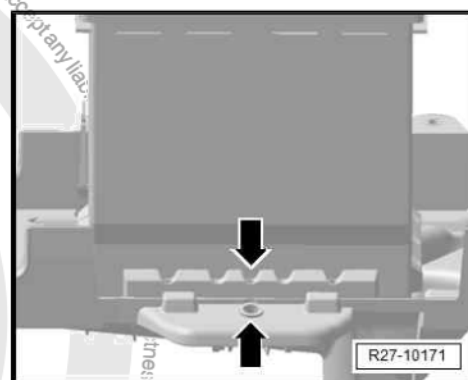


The Battery - A- will be correctly positioned when the central groove of its base is aligned with the hole on the Battery - A- -arrows-.

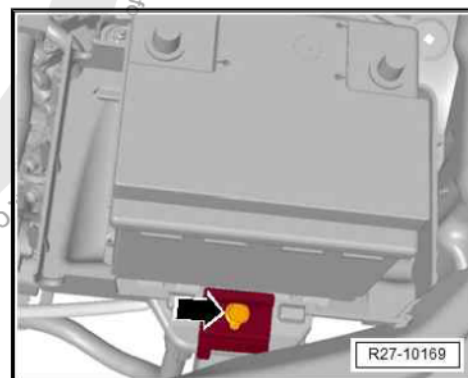


#### Note

- ◆ For Batteries - A- with flexible tube for central degassing, please make sure that the flexible tube is not disconnected. This is the only way the Battery - A- can be freely degassed.
- ◆ With Batteries - A- without flexible tube for central degassing, please make sure the opening on the upper cover section is not clogged.



- Install the support and fastening screw -arrow- of the Battery - A- .
- Tighten fastening screw -arrow- with torque of ➔ [page 10](#) .
- Install support and fuse box.
- Connect the Battery - A- ➔ [page 1](#) .
- After installation, check the correct Battery - A- fastening. If the Battery - A- is not correctly fastening, the following may happen:
  - The Battery - A- service life may be reduced due to vibration.
  - Damages to the Battery - A- casing.
  - Safety issues in case of collision.



## 1.3 Battery -A- Console - remove and install

### 1.3.1 Battery - A- console for vehicles with 1.6-litre engine - remove and install

#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect and remove Battery - A- ➔ [page 2](#) .
- Remove air filter ➔ Engine; Rep. gr. 24 ; Fuel system .



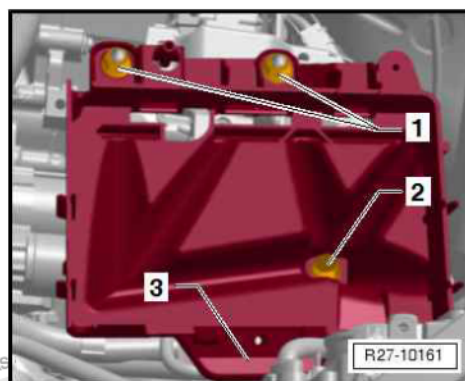


- Loosen securing nuts -1- and the securing bolt -2- from the Battery - A- console-3-.
- Remove the flexible rubber draining tube from the lower part of the Battery - A- .
- Remove the Battery - A- -3- console from its housing.

Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Tighten the fastening nuts -1- and the fastening bolt -2- to torque of ➤ [page 10](#) .
- Remove the flexible rubber draining tube from the lower part of the Battery - A- in its console.
- Connect the Battery - A- ➤ [page 1](#) .



### 1.3.2 Battery - A- console for vehicles with 1.0 litre engine - remove and install

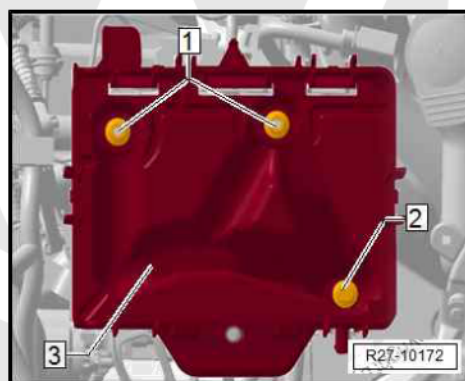
Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect and remove Battery - A- ➤ [page 2](#) .
- Loosen securing nuts -1- and the securing bolt -2- from the Battery - A- console-3-.
- Remove the flexible rubber draining tube from the lower part of the Battery - A- .
- Remove the Battery - A- -3- console from its housing.

Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Tighten the fastening nuts -1- and the fastening bolt -2- to torque of ➤ [page 10](#) .
- Remove the flexible rubber draining tube from the lower part of the Battery - A- in its console.
- Connect the Battery - A- ➤ [page 1](#) .



### 1.4 Tightening torques - Battery

Location	Tightening torques
Terminals to battery poles	$6 \pm 1$ Nm
Auxiliary terminal to battery pole terminal (fuse box - version 1 and 2)	$6 \pm 1$ Nm
Auxiliary terminal to battery pole terminal (fuse box - version 3)	$9 \pm 1$ Nm
Battery console fastening bolts and nuts	$16 \pm 2$ Nm
Fastening bolt of the battery support	$16 \pm 1$ Nm



## 2 Starter



### WARNING

Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ [page 1](#).



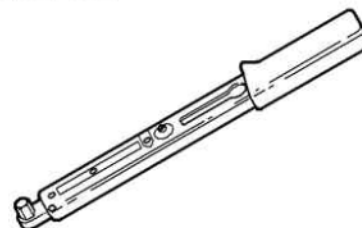
### Note

- ◆ Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A-.
- ◆ The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).
- ◆ When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.

### Special tools and workshop equipment required

- ◆ Torque wrench - 5 to 50 Nm (fit. 1/2") - VAG 1331-

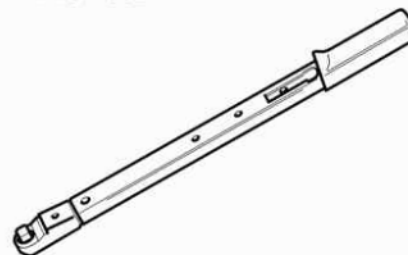
V.A.G 1331



Q00-10065

- ◆ Torque wrench - 40 to 200Nm (fit. 1/2") - VAG 1332-

V.A.G 1332



Q00-10074

### 2.1 Starter -B- - remove and install

#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Put the vehicle on a lift in order to make the operation easier.
- Disconnect the Battery - A- ➔ [page 1](#).



- Remove the lower engine noise insulation, if necessary ⇒ General body repairs, exterior; Rep. gr. 50 ; Body - Front section .
- Remove securing nut-3- below the Starter - B- and remove the cable bracket -1-.
- Remove fastening bolt -2- from the Starter - B- .

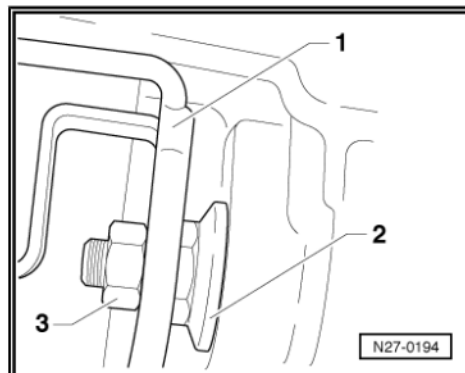
I-Motion Vehicles:

- Remove the battery console ⇒ [page 9](#) .

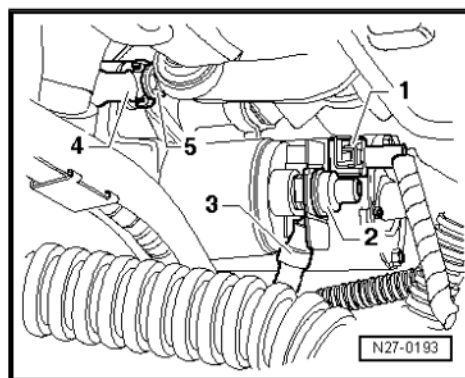
Vehicles with manual gearbox:

- Remove gearbox selector lever ⇒ Clutch and transmission; Rep. gr. 34 ; Drive, case .

Continued for all versions:



- Disconnect the terminal (50) -1- from the Starter - B- .
- Remove the plastic cover -2- and remove the positive wire -3- from the magnetic switch.
- Remove the hexagonal nut -5-.
- Remove earth strap -4- and loosen the hexagonal screw.
- Remove the Starter - B- .



Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Tighten the Starter - B- fastening nuts to the specified torque ⇒ [page 28](#) .

## 2.2 Starter-B- (Manufacturer Valeo) - disassemble and assemble





1 - Starter - B-

- ☐ Remove and install  
⇒ [page 11](#) .

2 - Lever

3 - Mobile core

4 - Magnetic switch

- ☐ Remove and install  
⇒ [page 13](#) .

5 - Hexagonal nut

- ☐ 9.5 Nm.

6 - Starter - B- lid

7 - Bolt

- ☐ 3.3 Nm.

8 - Bolt

- ☐ 6.4 Nm.

9 - Brush holder

10 - Coil (Polar case)

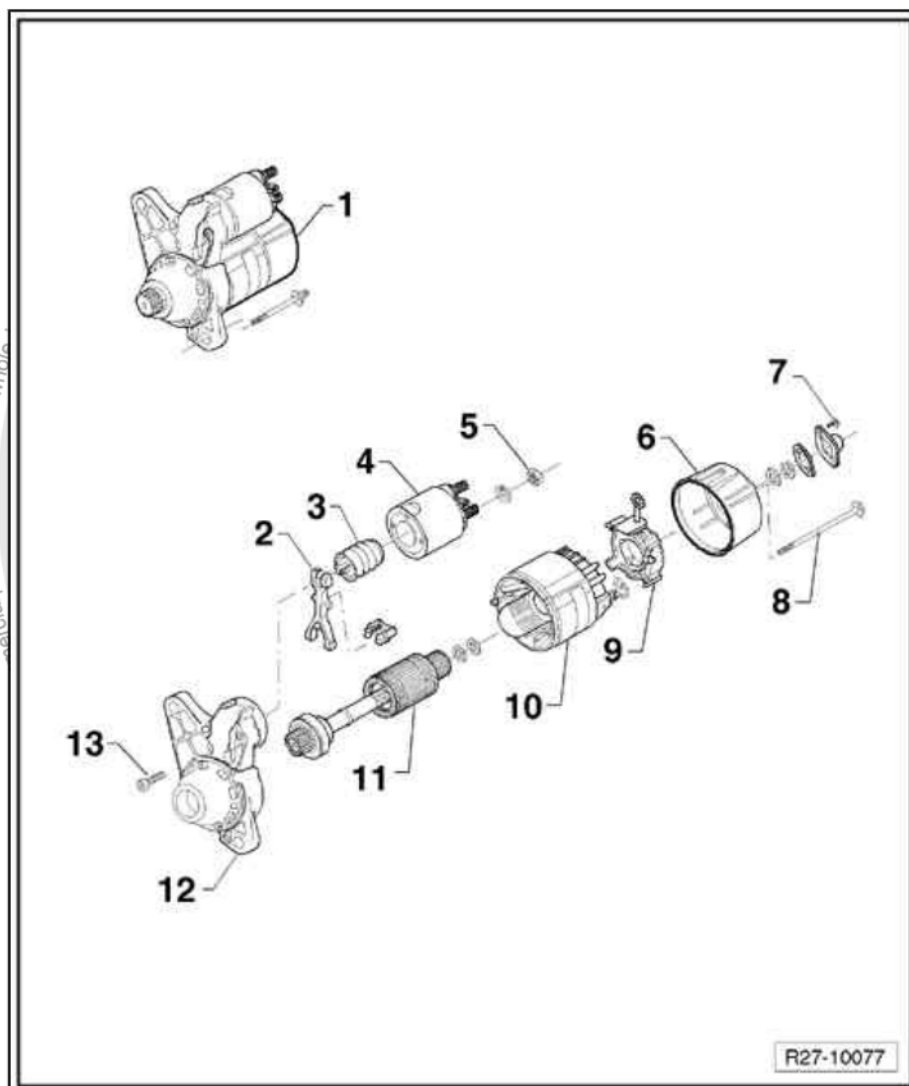
11 - Gearing pinion and armature assembly

- ☐ Remove and install  
⇒ [page 14](#) .

12 - Drive bearing

13 - Bolt

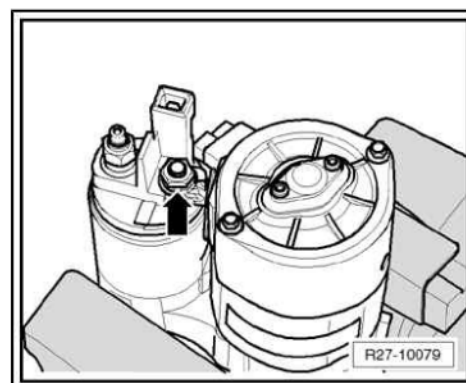
- ☐ Used to fasten the magnetic wrench.
- ☐ 3.75 Nm.



## 2.2.1 Magnetic switch - remove and install

### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ⇒ [page 1](#) .
- Remove the Starter - B- ⇒ [page 11](#) .
- Loosen the fastening nut -arrow- and disconnect the brush cable.





- Remove the fastening screws -arrows- for the magnetic key.



#### Note

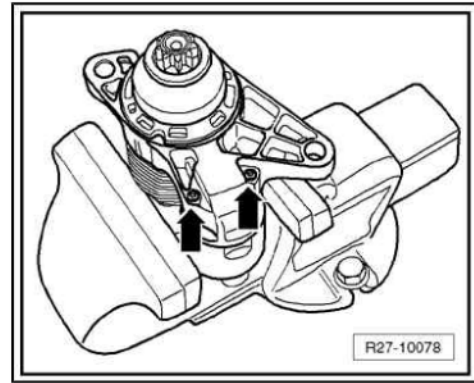
*Use a good quality wrench. If removal is difficult, hit the screw heads sharply a few times with a pointed punch.*

- Remove the magnetic switch.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

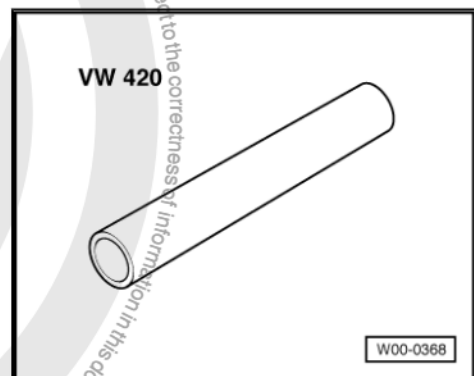
- Install the spring and magnetic switch, and fasten the magnetic switch screws to (3.75 Nm).
- Connect the brush cable by fastening it with the nut tightened to (9.5 Nm).
- Install the Starter - B- ➔ [page 11](#) .



### 2.2.2 Armature and gearing pinion - remove and install

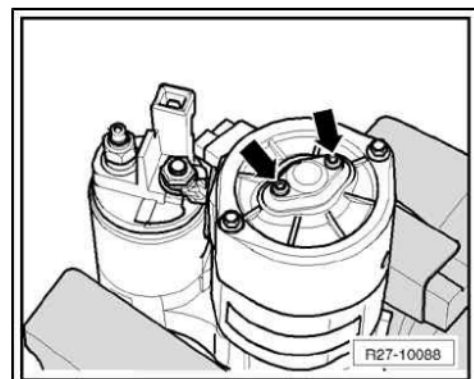
Special tools and workshop equipment required

- ◆ Pressure pipe - VW 420-



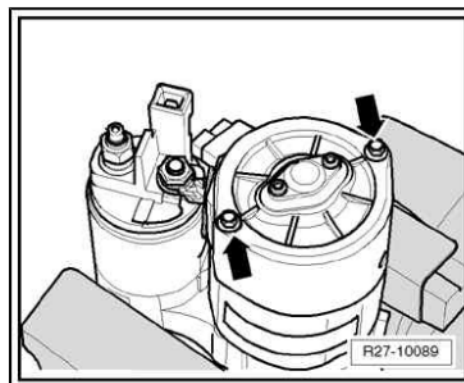
#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Remove the Starter - B- ➔ [page 11](#) .
- Remove the magnetic switch ➔ [page 13](#) .
- Loosen fastening screws -arrows- from the rear cover of the shaft end.
- Remove lock washer, flat washer, and sealing ring.





- Remove fastening screws for the polar case cover cap -arrows- and remove the cover.



- Using the Pressure tube - VW 420- as a guide, slide the brush holder -arrow- and remove it from the armature.



Note

*Handle carefully, because the springs may jump out of the brush holder.*

- Remove the polar case by pulling it out.



Note

*Please be very careful with your fingers, as the armature is strongly pulled by the magnets.*

- Remove the armature and gearing pinion.

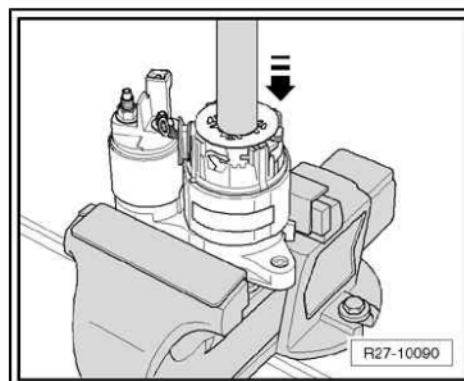
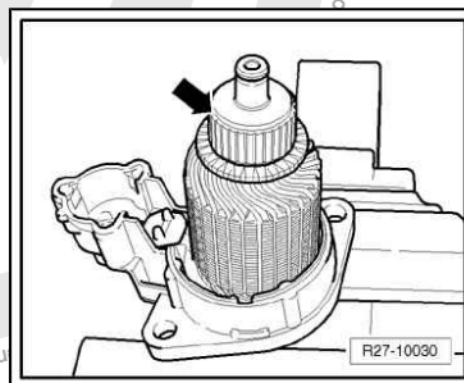
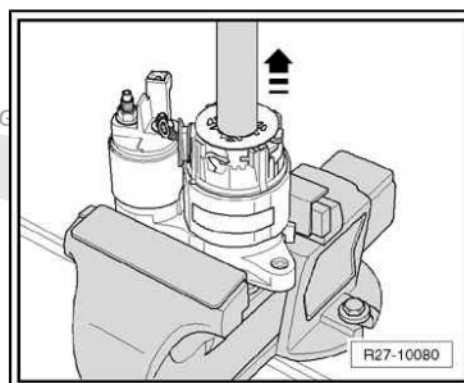
Installation:

- Fit the armature -arrow- to the activation bearing, together with the operating rod and rubber stop.
- Fit the polar case.



Note

*Please be very careful with your fingers, as the armature is strongly pulled by the magnets.*



- Fit the brush holder using the Pressure tube - VW 420- and slide it toward the rotor -arrow-, then remove the tool.

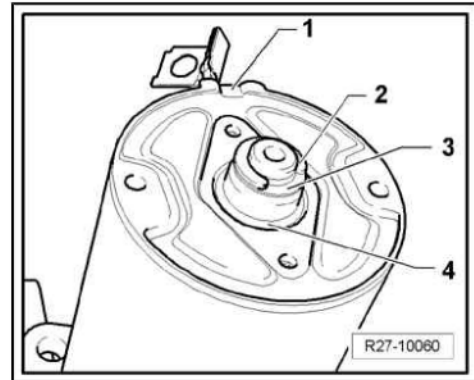


- Install rear cover, paying attention to the correct position of tab and the cover screw holes.
- Place cable seal rubber on the case cover -1-.
- Fit seal -4-, plain washer -3- and circlip -2- on armature shaft.

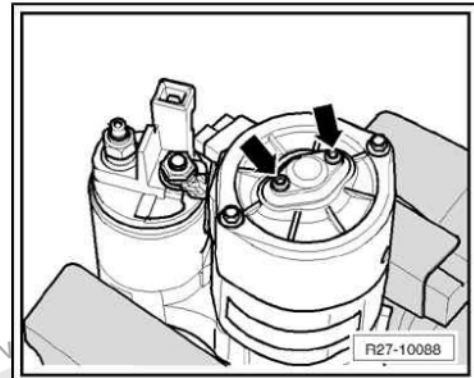


Note

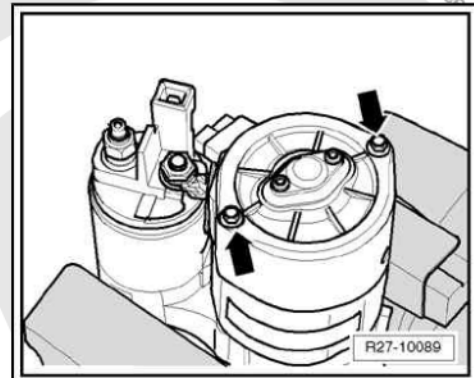
*If you are unable to easily fit the circlip, pull the shaft a little outwards.*



- Install the rear axle end cover and tighten the screws -arrows- to a (3.3-Nm) torque.



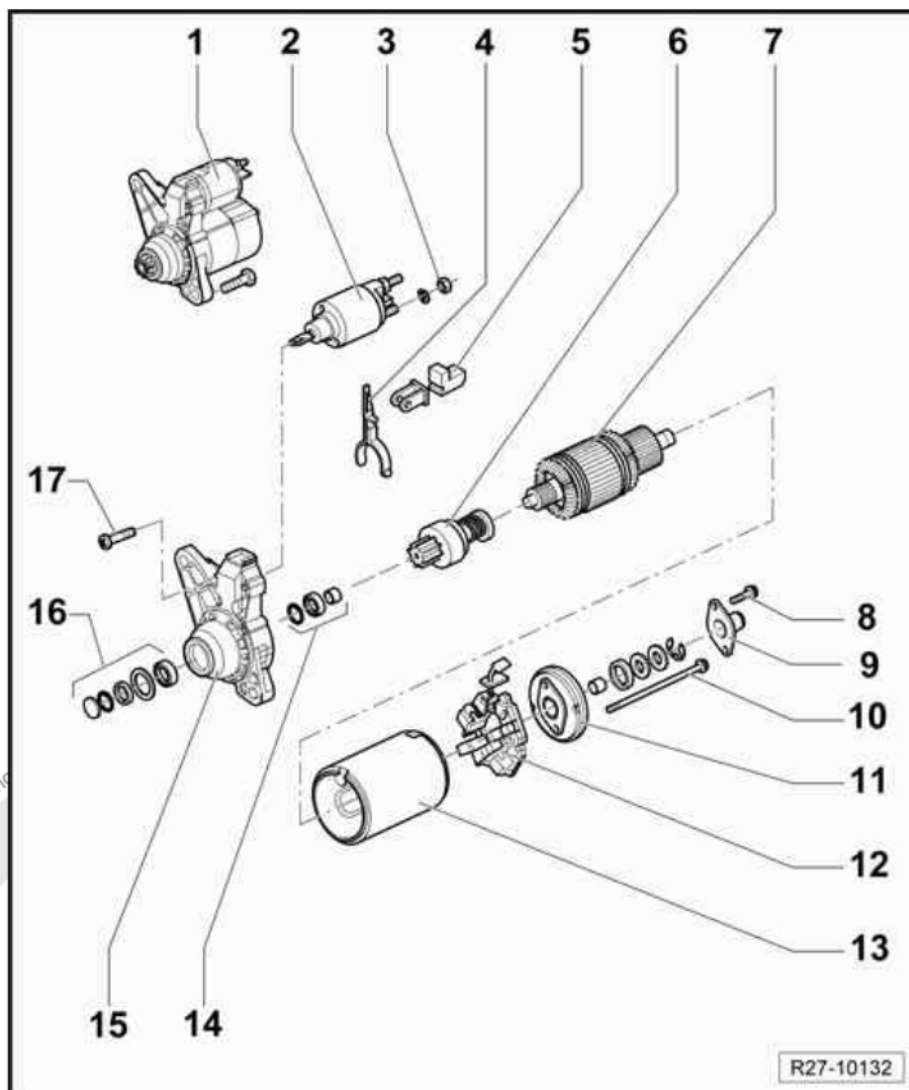
- Install the fastening screws -arrows- of the polar case cover cap by applying a (6.4-Nm) torque.
- Install the magnetic switch ➔ [page 13](#) .
- Install the Starter - B- ➔ [page 11](#) .



## 2.3 Starter-B- (Manufacturer Bosch) - disassemble and assemble



- 1 - Starter - B-
  - ☐ Remove and Install  
⇒ [page 11](#) .
- 2 - Magnetic switch
  - ☐ Remove and install  
⇒ [page 17](#) .
- 3 - Hexagonal nut
  - ☐ 8 Nm.
- 4 - Operating rod
- 5 - Rubber striker
- 6 - Gearing pinion
  - ☐ Remove and install  
(Fastened on armature shaft) ⇒ [page 21](#) .
- 7 - Armature
  - ☐ Remove and install  
⇒ [page 19](#) .
- 8 - Bolt
  - ☐ 2 units
  - ☐ 2 Nm.
- 9 - Shaft cover (armature)
- 10 - Bolt
  - ☐ 2 units
  - ☐ 6 Nm.
- 11 - Starter - B- lid
- 12 - Brush holder
- 13 - Coil (Polar case)
- 14 - Circlip and capsule
- 15 - Drive bearing
- 16 - Repair set (metal cover, bearing bushing, sealing ring)
- 17 - Bolt
  - ☐ Used to fasten the magnetic wrench.
  - ☐ 7 Nm.



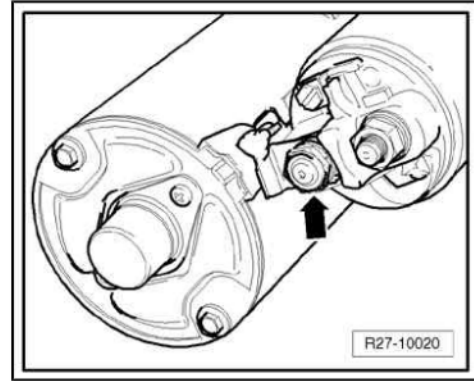
### 2.3.1 Magnetic switch - remove and install

#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ⇒ [page 1](#) .
- Remove the Starter - B- ⇒ [page 11](#) .



- Remove fastening nut -arrow- and disconnect the brush cable.



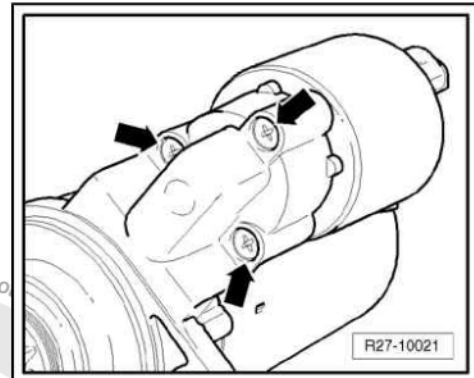
- Remove the fastening screws -arrows- for the magnetic key.



Note

*Please use a good quality cross-slotted screwdriver. If removal is difficult, hit the screw heads sharply a few times with a pointed punch.*

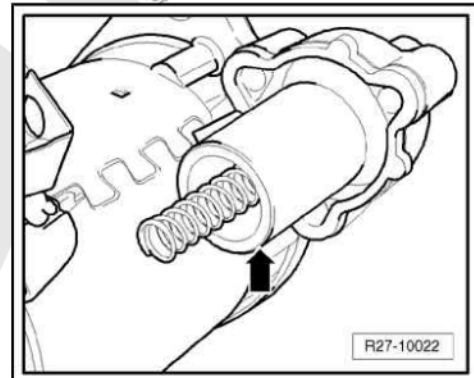
- Remove the magnetic switch.



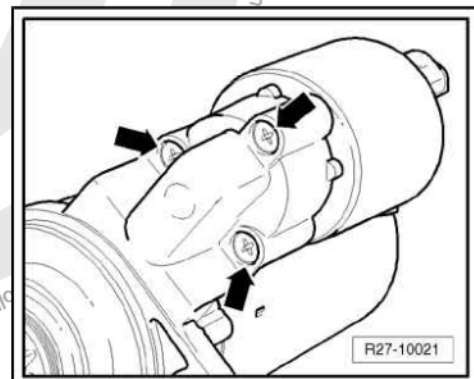
- Remove the spring and the rod operating plunger -arrow-.

Installation:

- Install plunger onto operating rod.



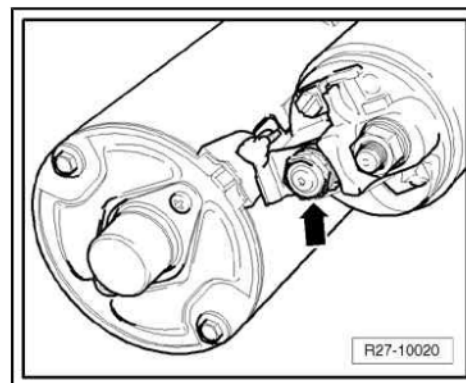
- Install the spring and the magnetic switch and tighten fastening screws -arrows- with 7-Nm torque.







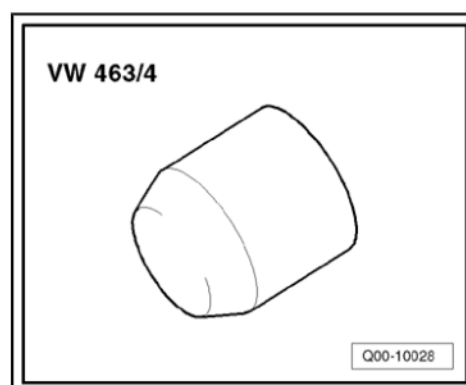
- Connect the brush cable and tighten fastening nut -arrow- with 8-Nm torque.
- Install the Starter - B- ➔ [page 11](#) .



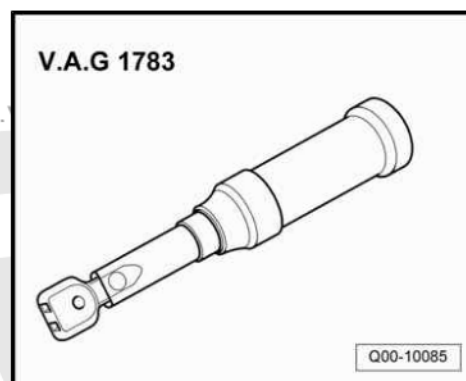
### 2.3.2 Armature - remove and install

Special tools and workshop equipment required

- ◆ Device - VW 463/4- .



- ◆ Torque wrench 2 to 10 Nm - VAG 1783- .

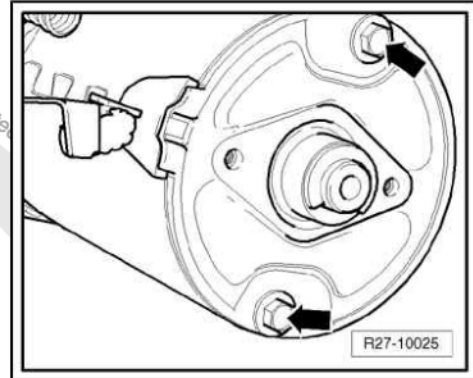


#### Removal:

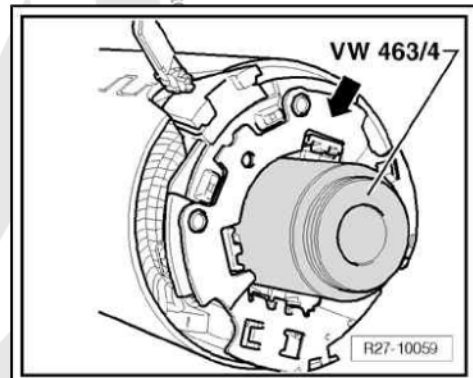
- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Remove the Starter - B- ➔ [page 11](#) .
- Remove the magnetic switch ➔ [page 13](#) .
- Remove shaft end rear cover, circlip, plain washer, and sealing ring.



- Remove the fastening screws -arrows- from the polar case cover cap.



- Using the Device - VW 463/4- as a guide, slide the brush holder -arrow- and remove it from the armature.
- Remove the armature from the polar case by pulling it.



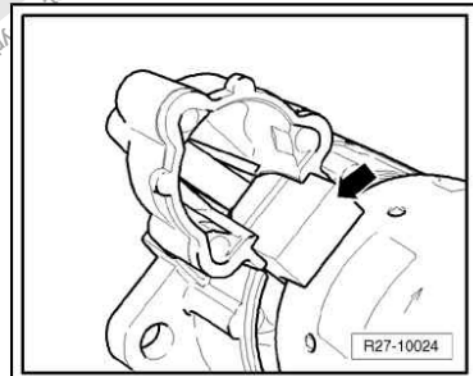
#### Note

*Please be very careful with your fingers, as the armature is strongly pulled by the magnets.*

- Remove the rubber buffer -arrow-.

#### Installation:

- Install the armature in the activation bearing and in the polar case.

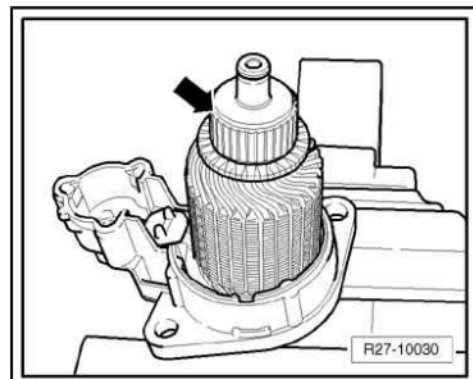


- Fit the armature -arrow- to the activation bearing, together with the operating rod and rubber buffer.



#### Note

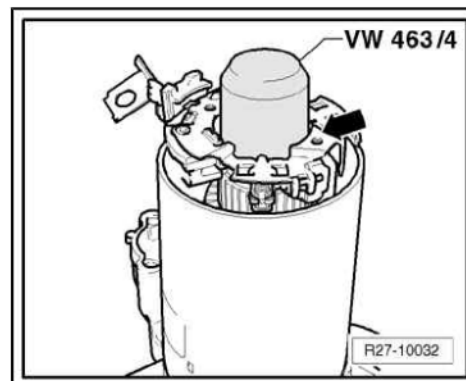
*Please be very careful with your fingers, as the armature is strongly pulled by the magnets.*







- Fit the brush holder -arrow- using the Device - VW 463/4- , sliding it toward the rotor, and then removing the tool.

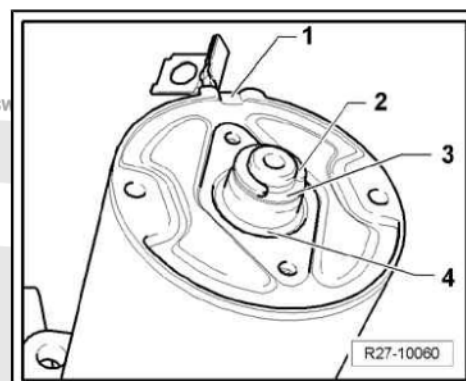


- Place the housing cable seal rubber -1-.
- Install rear cover, paying attention to the correct position of tab and the cover screw holes.
- Fit seal -4-, plain washer -3- and circlip -2- on armature shaft.

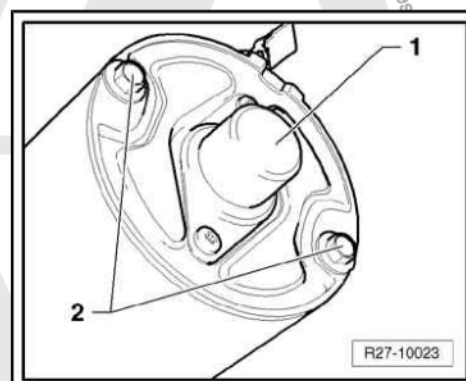


#### Note

*If you are unable to easily fit the circlip, pull the shaft a little outwards.*



- Install rear axle end cover -1- and tighten the screws with a (2-Nm) torque.
- Install and tighten fastening screws -2- of the polar case cover cap by applying a (6-Nm) torque.
- Install the magnetic switch ➔ [page 17](#) .
- Install the Starter - B- ➔ [page 11](#) .



### 2.3.3 Gear pinion (Fixed on the armature shaft) - remove and install

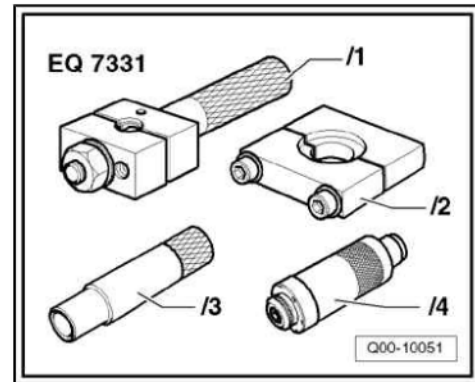
Special tools and workshop equipment required



- ◆ Assembly device - EQ-7331/1-
- ◆ Assembly tool - EQ-7331/2-
- ◆ Lock puller - EQ-7331/3-



◆ Pressing tool - EQ-7331/4-



Removal:

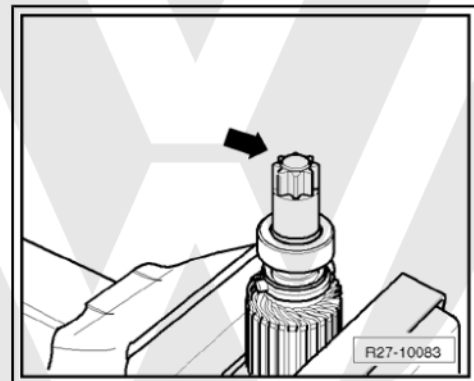
- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➤ [page 1](#) .
- Remove the Starter - B- ➤ [page 11](#) .
- Remove the armature ➤ [page 19](#) .



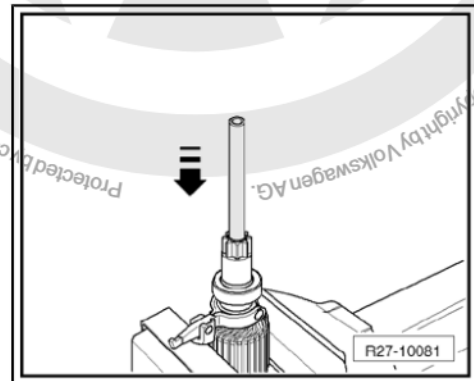
WARNING

*When setting the armature on the vise, please be careful not to damage the magnets. Should any damage occur, the armature must be replaced.*

- Remove metallic cover -arrow- with the Assembly device - EQ-7331/1- .



- Lower the fastening capsule of the circlip by using a tube with diameter (13 mm)-arrow-, tapping slightly on the tube with a rubber or wooden hammer until displacing the capsule from the circlip.
- Use pliers or a screwdriver to remove the circlip and capsule from the armature shaft.





- Remove the gearing pinion -arrow - from the armature shaft.

Installation:



#### WARNING

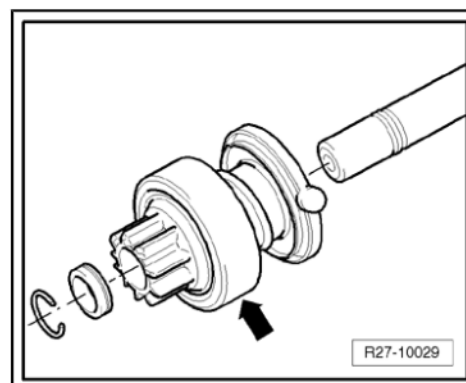
*Whenever the gearing pinion is being repaired, please replace the components below: metallic cover, snap ring and capsule.*

- Secure slightly the armature on the vise.



#### WARNING

*When setting the armature on the vise, please be careful not to damage the magnets. Should any damage occur, the armature must be replaced.*



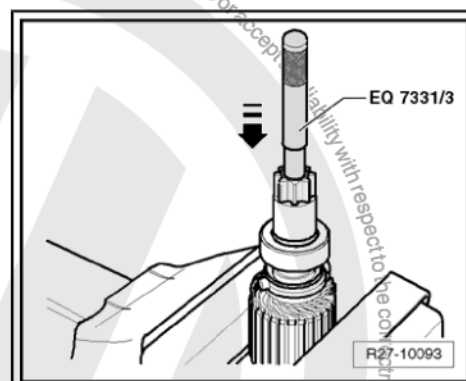
- Install the gearing pinion in the armature shaft.
- Fit the buffer capsule on the armature shaft.



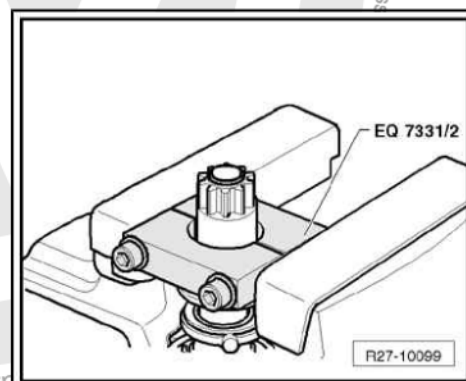
#### Note

*Observe that the buffer capsule has an assembling side.*

- Mount the circlip on shaft.
- Fit the circlip on the shaft notch by using the Lock puller - EQ-7331/3- and tapping slightly with a hammer towards -arrow-.

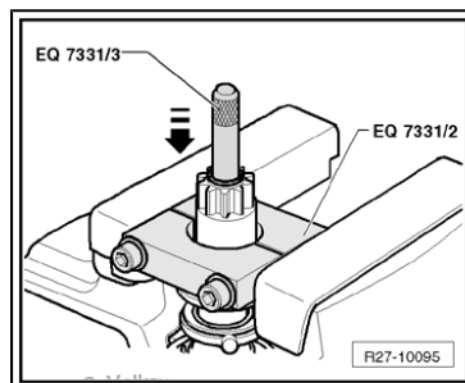


- Mount the Assembly tool - EQ-7331/2- on the gearing pinion and secure the assembly on the vise.

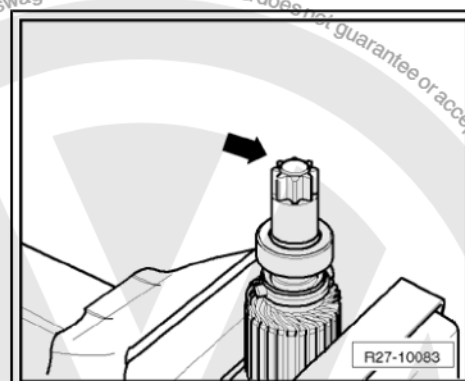




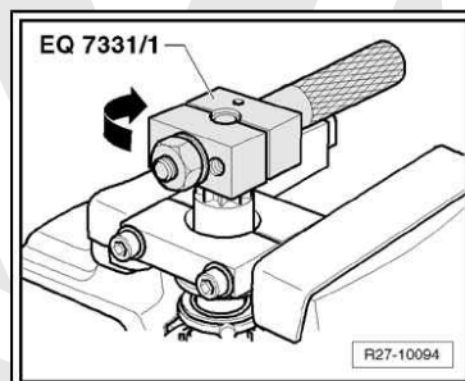
- To encapsulate the circlip to the fastening capsule, use the Lock puller - EQ-7331/3- -3- and tap slightly with a hammer towards -arrow- until fitting.



- Install the metallic cover-arrow-.



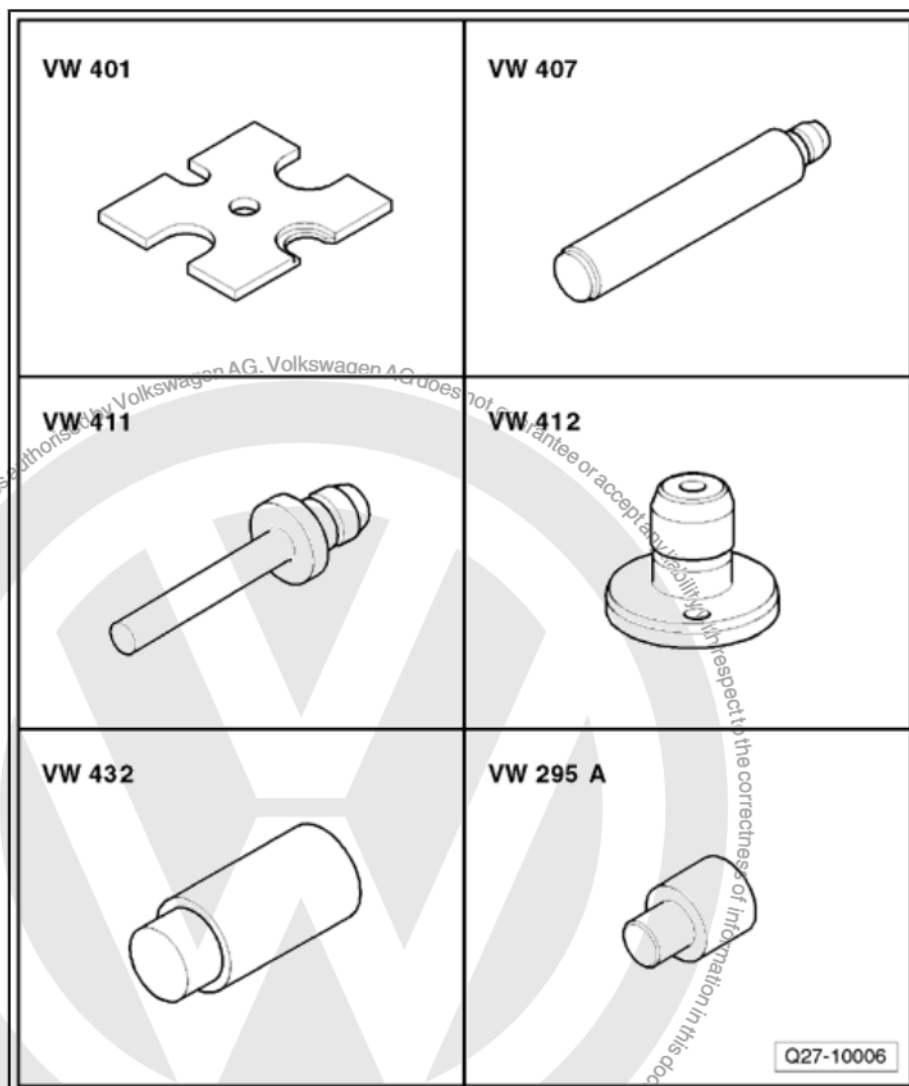
- Use the Assembly device - EQ-7331/1- -1- to drive the metallic cover on the gearing pinion.
- Install the armature ⇒ [page 19](#) .



## 2.3.4 Bearing Bushing - remove and install



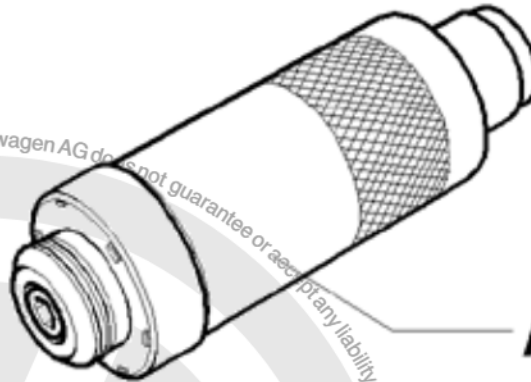
Special tools and workshop  
equipment required



- ◆ Plate - VW 401-
- ◆ Pressure pin - VW 407-
- ◆ Pressure pin - VW 411-
- ◆ Pressure disc - VW 412-
- ◆ Pressure base - VW 432-
- ◆ Base - VW 295A-



## EQ 7331



/4

Q00-10054

### ◆ Pressing tool - EQ-7331/4-

#### Bearing bushing removal:

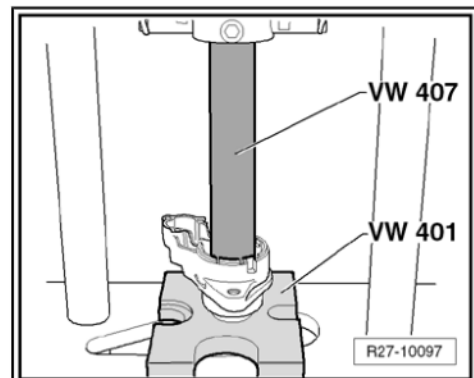
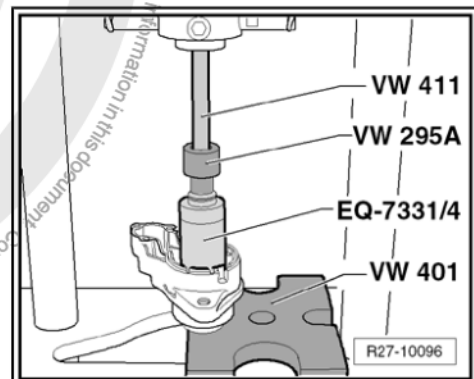
- Support the case on Plate - VW 401- and remove the bearing bushing with the circlip.

#### Bearing bushing installation:

- Install the bushing on case to the stop, by using the Pressure pin - VW 407- .

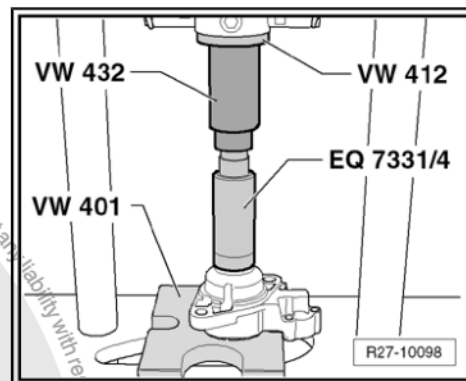
#### Sealing ring installation:

- Fit sealing ring on case.





- Support case on the Plate - VW 401- and re-drive by using the Pressing tool - EQ-7331/4- .



## 2.4 Fox Bluemotion 3-cylinder EA211 engine starter motor - remove and install

### 1 - Starter - B-

- ☐ Remove and Install.  
⇒ [page 27](#)

### 2 - Positive battery cable connector

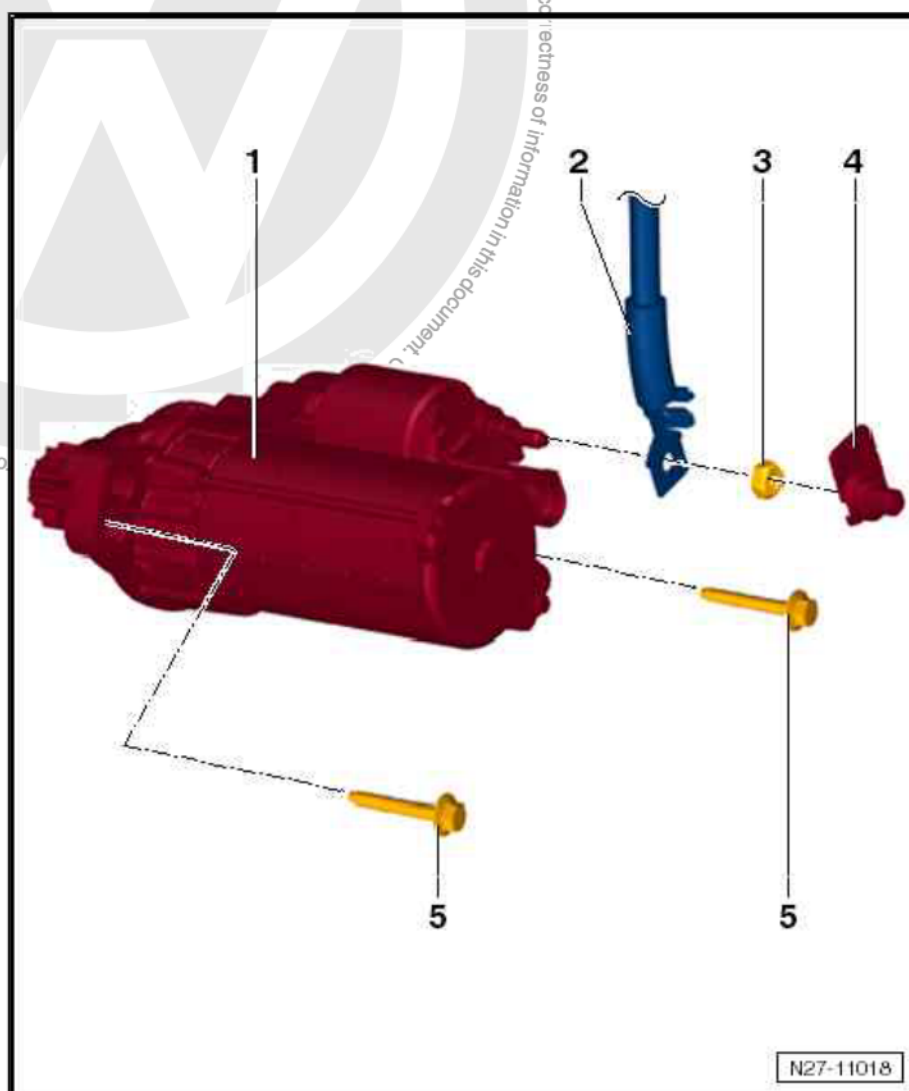
### 3 - Cable fastening nut

- ☐ M8
- ☐ 15 Nm

### 4 - Protection cap

### 5 - Starter fastening screws

- ☐ M10 x 55
- ☐ 40 Nm



### 2.4.1 Fox Bluemotion 3-cylinder EA211 engine starter motor - remove and install

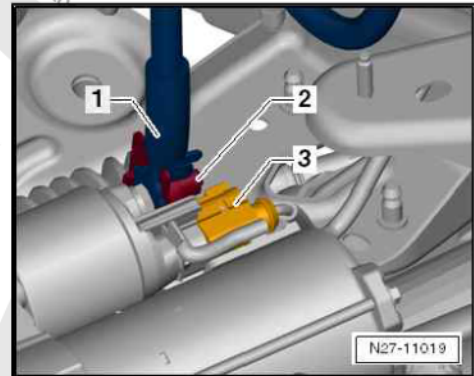
#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.





- Disconnect the Battery - A- ⇒ [page 1](#) .
- Remove the plastic cover -2- and remove the positive cable -1- from the magnetic interrupter and disconnect the terminal-3- from the Starter - B- .

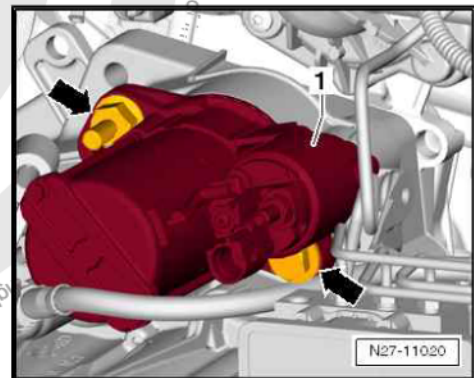


- Release the fastening screws-arrows- and remove the Starter - B- -1-.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Tighten the Starter - B- fastening nuts to the specified torque ⇒ [page 28](#) .



## 2.5 Tightening torques - Starter

Location	Tightening torques	
Starter to transmission	M12	80 Nm
Starter to transmission	M10	40 Nm
Earth strap	M8	15 Nm
Cable support	M8	15 Nm
positive wire to electromagnetic switch	M8	15 Nm





### 3 Alternator



#### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ [page 1](#) .*



#### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .*
- ◆ *Check Generator (Alternator) - C- : ➔ Manual "Current flow diagram", Troubleshooting in the Electrical System and Installation Locations .*
- ◆ *When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

#### 3.1 Generator (Alternator) -C- - cable fastening (B+)

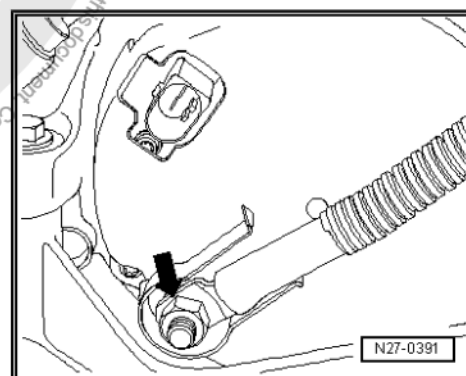


#### Caution

*If the (B+) cable is not tightened to the torque specified, the following hazards may occur:*

- *The Battery - A- does not fully charge.*
- *Total collapse of the vehicle electrical/electronic system (car damaged).*
- *Fire hazard due to production of sparks.*
- *Failures due to excessive charge in electronic components and control units.*

Observe the tightening torque for the fastening nut -arrow- on cable (B+) ➔ [page 41](#) .





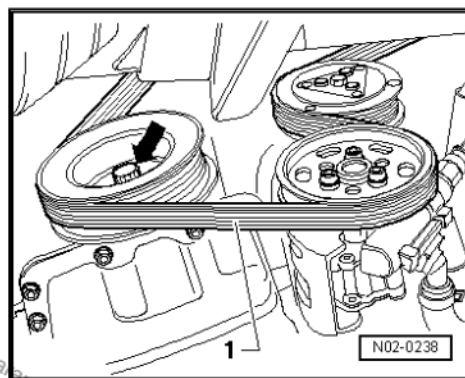
### 3.2 Generator (Alternator) -C- - check Poly-V belt



#### Note

*If failures are detected, the Poly-V belt must be replaced to prevent operation failures or anomalies.*

- Turn engine manually using the crankshaft pulley -arrow-.
- With the vehicle raised, check Poly-V belt -1- for:
  - ◆ Cracks in the lower section (slots, central fractures, transversal fractures)
  - ◆ Layer separation (cover layer, cords)
  - ◆ Fissure on lower section
  - ◆ Fraying of cord strands
  - ◆ Worn sides (material wearing, frayed sides, side hardening -glassy sides), surface cracks
  - ◆ Contact with oil and grease.



### 3.3 Generator (Alternator) -C- for 1.0 and 1.6 liter engines - assembly overview

Vehicles with air conditioning:



1 - Mounting bracket

- ☐ For vehicles with air conditioning.

2 - Voltage regulator - C1-

- ☐ (Bosch) - disassemble and assemble  
⇒ [page 38](#) .
- ☐ (Valeo) - disassemble and assemble  
⇒ [page 39](#) .

3 - Protection cap

4 - Generator (Alternator) - C-

- ☐ Remove and install  
⇒ [page 32](#) .
- ☐ Check (B+) cable connection ⇒ [page 29](#) .
- ☐ Replace the Poly-V belt pulley ⇒ [page 36](#) .

5 - Poly-V belt (elastic)

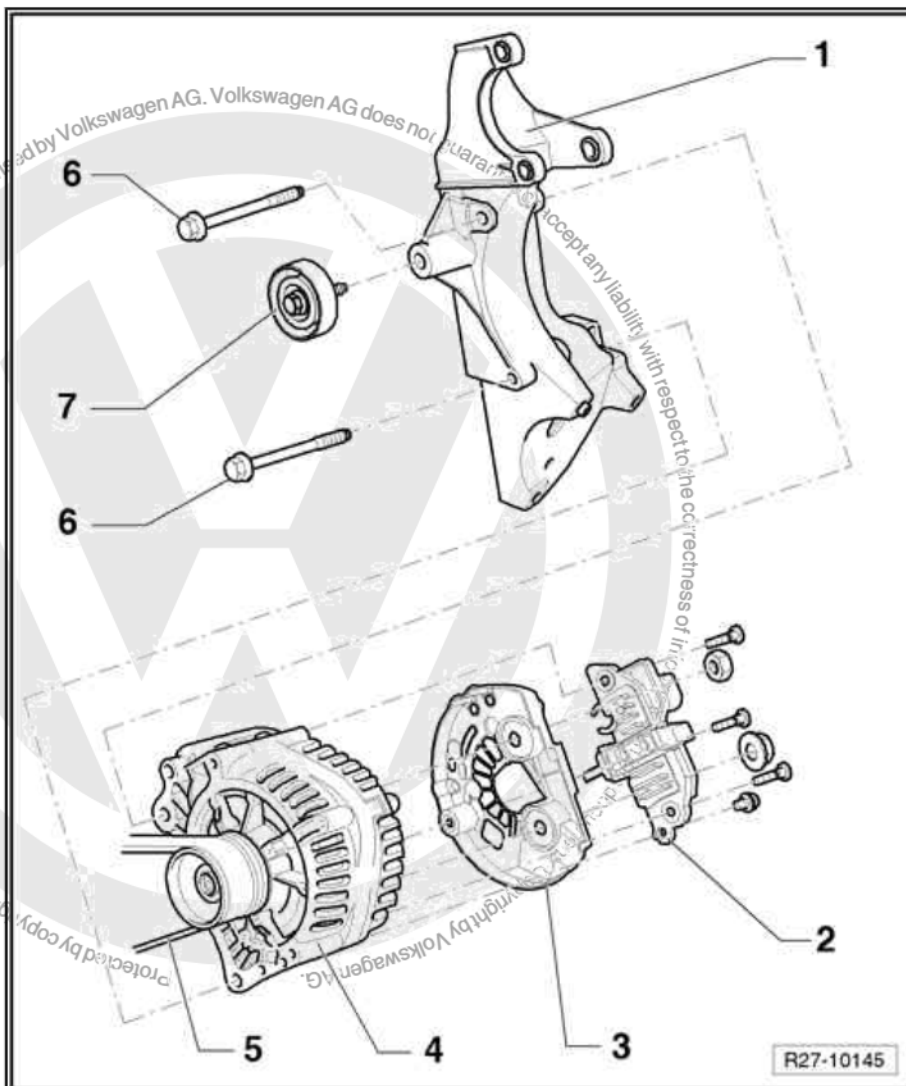
- ☐ Remove and install ⇒ Engine; Rep. gr. 13 ; Crankshaft, pistons
- ☐ Check the Poly-V belt  
⇒ [page 30](#) .
- ☐ Poly-V belt run ⇒ Engine; Rep. gr. 13 ; Crankshaft, pistons .

6 - Bolts

- ☐ 23 Nm.

7 - Idler roller

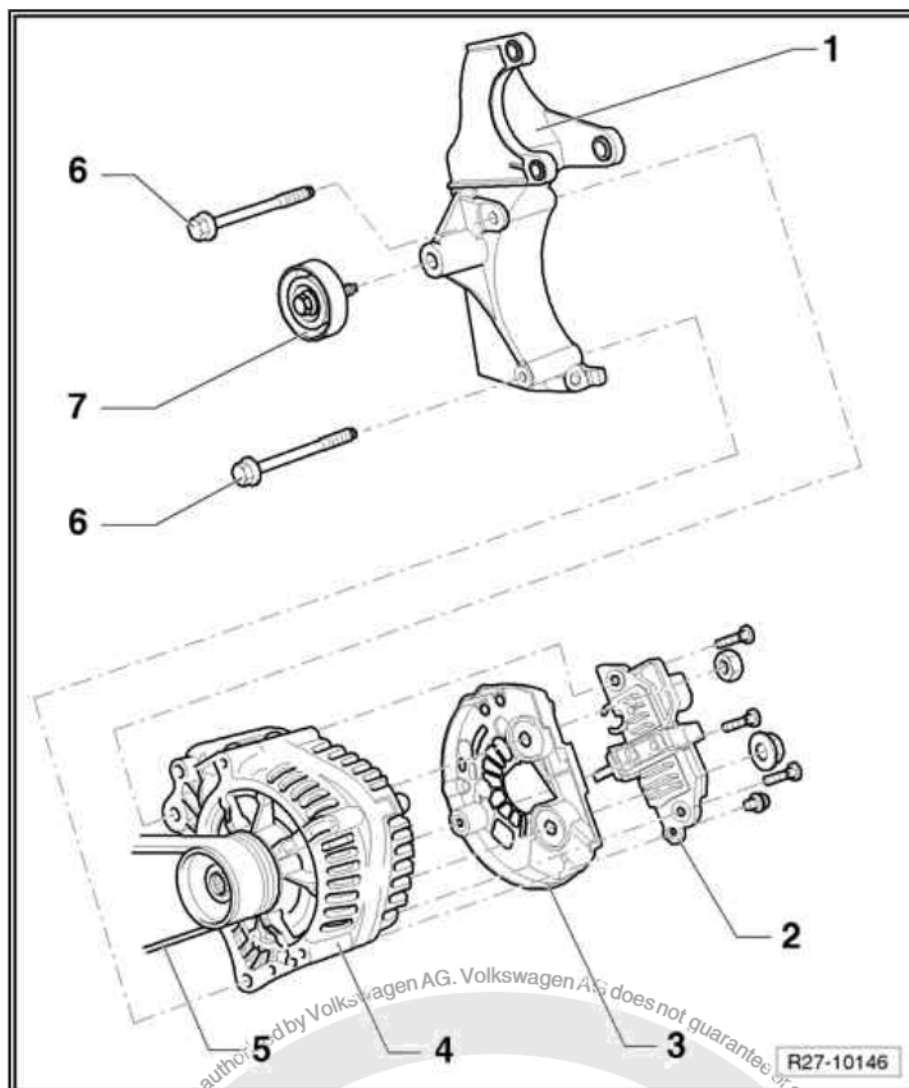
- ☐ 45 Nm.



Vehicles without air conditioning:



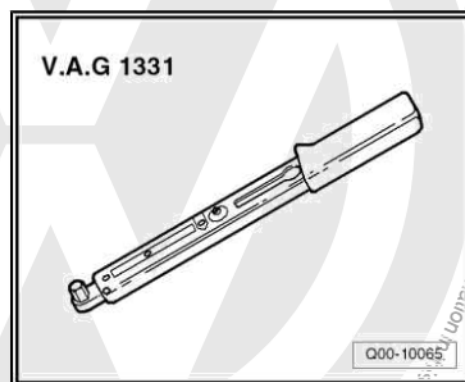
- 1 - Mounting bracket
  - ☐ For vehicles without air conditioning.
- 2 - Voltage regulator - C1-
  - ☐ (Bosch) - disassemble and assemble  
⇒ [page 38](#) .
  - ☐ (Valeo) - disassemble and assemble  
⇒ [page 39](#) .
- 3 - Protection cap
- 4 - Generator (Alternator) - C-
  - ☐ Remove and install  
⇒ [page 32](#) .
  - ☐ Check (B+) cable connection ⇒ [page 29](#) .
  - ☐ Replace the Poly-V belt pulley ⇒ [page 36](#) .
- 5 - Poly-V belt (elastic)
  - ☐ Remove and install ⇒ Engine; Rep. gr. 13 ; Crankshaft, pistons
  - ☐ Check the Poly-V belt  
⇒ [page 30](#) .
  - ☐ Poly-V belt run ⇒ Engine; Rep. gr. 13 ; Crankshaft, pistons .
- 6 - Bolts
  - ☐ 23 Nm.
- 7 - Idler roller
  - ☐ 45 Nm.



### 3.3.1 Generator (Alternator) - C- for 1.0 and 1.6-liter engines - remove and install

Special tools and workshop equipment required

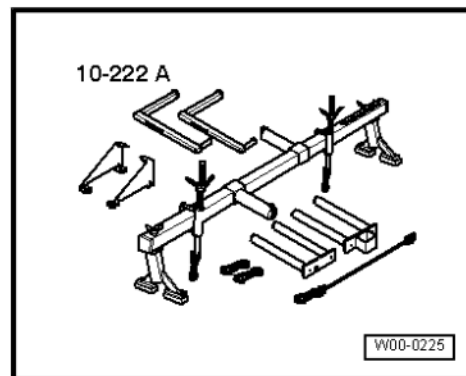
- ◆ Torque wrench - 5 to 50 Nm (fit. 1/2") - VAG 1331-



- ◆ Support bracket - 10-222A-
- ◆ Claws - 10-222 A/1-

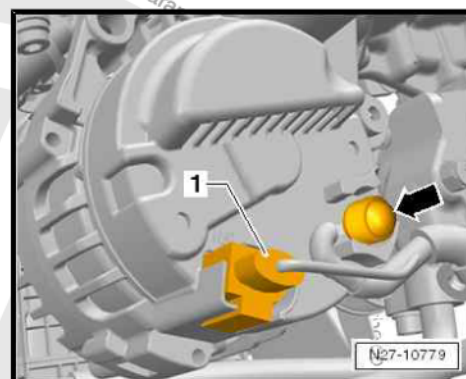


- ◆ Lifting eyelets, replacement part number: Support - 030 103 390 F- pulley side

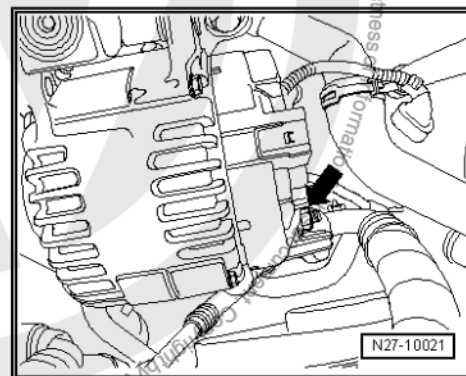


#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➤ [page 1](#) .
- Remove the lower engine noise insulation, if any⇒ General body repairs, exterior; Rep. gr. 50 ; Body - Front section .
- Remove wheel case cover (right side) ⇒ General body repairs, exterior; Rep. gr. 66 ; External equipment .
- Mark the direction of movement of the Poly-V belt (elastic).
- Remove Poly-V (elastic) belt⇒ Engine; Rep. gr. 13 ; Crankshafts, pistons .
- Disengage connector -1- and remove protective cover -arrow-.

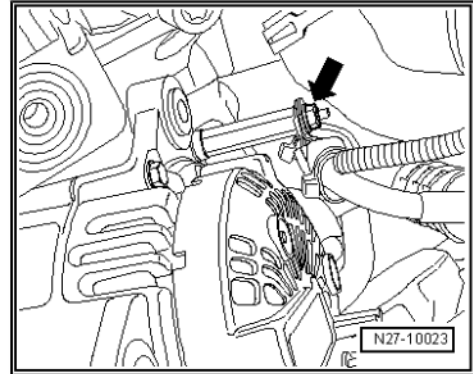


- Loosen fastening nut -arrow- on cable (B+) and remove the cable.

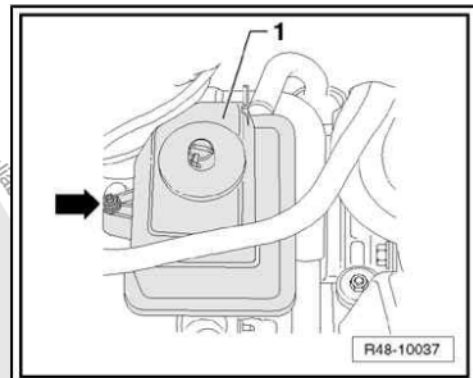




- Loosen the securing nut -arrow- from the Generator (Alternator) - C- cable support.



- Loosen the fastening screw -arrow- on the compensation reservoir.
- Remove the compensation reservoir from its support to facilitate access to the return pulley.



#### WARNING

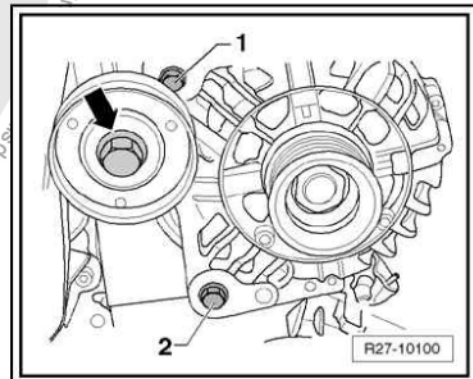
*Please move the compensation reservoir and support it carefully.*

Remove the pulley from the power steering pump ⇒ Chassis, axles, steering; Rep. gr. 48 ; Steering .

Continuation for:

Vehicles without air conditioning:

- Loosen fastening screw -arrow- from idler roller, and remove the pulley.
- Loosen securing bolts -1- and -2- of the Generator (Alternator) - C- .



#### Note

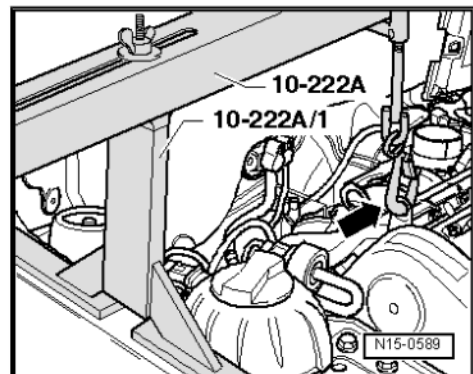
*For the CrossFox models, it is necessary to raise the engine assembly (approximately 5 to 10 mm) to facilitate the removal of the top fastening bolt -1- of the Generator (Alternator) - C- .*



#### WARNING

*Do not loosen screws on the powertrain support.*

- Place the Supporting device - 10-222A- with the Claws - 10-222 A/1- and support the engine in position.







- Raise the assembly by the right side (approx. 5 to 10 mm) to release the upper fastening bolt -1- of the Generator (Alternator) - C- .
- Remove the Alternator - C- .

Vehicles with air conditioning:

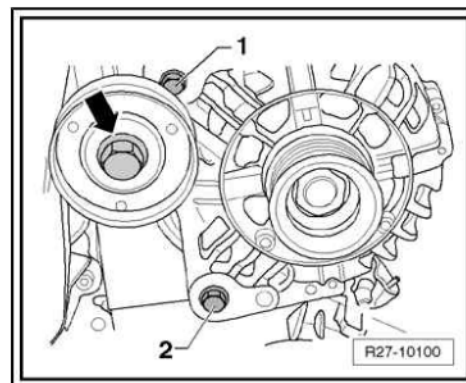
- Remove the Poly-V (elastic) belt from the air conditioning compressor ➔ Engine; Rep. gr. 13 ; Crankshaft, pistons .
- Remove the air conditioning compressor from its support ➔ Heating, air conditioning; Rep. gr. 87 ; Heating to clear the space for the passage of the Generator (Alternator) - C- .



#### WARNING

*The refrigerant gas circuit should not be opened.*

*Pay attention so that the flexible refrigerant hoses from the compressor are not pulled tight, mounting the compressor to the body with an adequate alternative mean, such as, for example, a wire.*

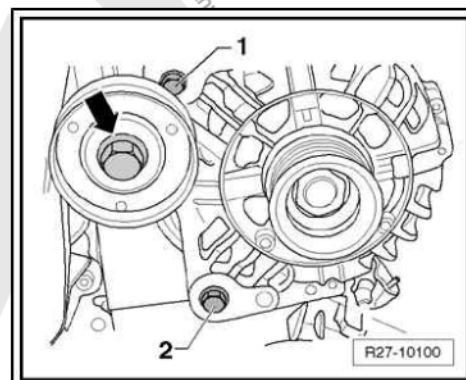


- Loosen the fastening screw -arrow- and remove return pulley.
- Loosen securing bolts -1- and -2- of the Generator (Alternator) - C- .
- Remove the Generator (Alternator) - C- .

Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- First, place Poly-V belt on the crankshaft pulley, and then on the tensioning pulley, as indicated on the belt run ➔ Engine; Rep. gr. 13 ; Crankshaft, pistons .
- Tighten the fastening nuts and screws to the specified tightening torque ➔ [page 41](#) .



#### Note

*After installation, start the engine and check the belt motion.*

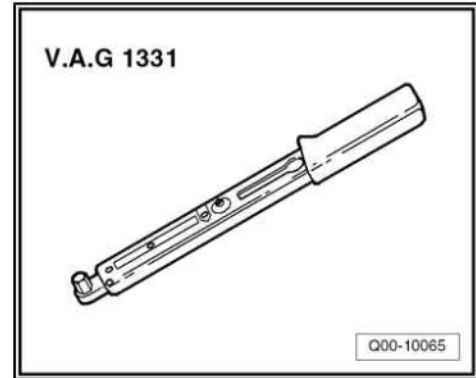
### 3.3.2 Generator (Alternator) - C- for EA 211 1.0 (Bluemotion) engines - remove and install

Special tools and workshop equipment required





- ◆ Torque wrench - 5 to 50 Nm (fit. 1/2") - VAG 1331-



#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ⇒ [page 1](#) .
- Remove Poly-V (elastic) belt⇒ Engine; Rep. gr. 13 ; Crankshafts, pistons .
- Remove the fastening nuts -arrows- .
- Pull the alternator away -1- considering the lengths of connected cables
- Disengage connector -4- and remove protective cover -2-.
- Loosen fastening nut -2- on cable (B+) and remove the cable.
- Remove the Generator (Alternator) - C- from over the vehicle.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

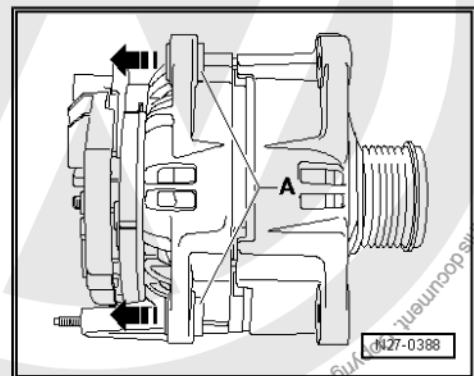
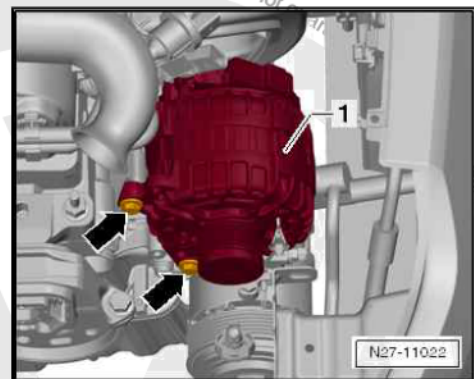
Lead threaded bearings -A- around 4mm in the direction of the arrows to facilitate installation.

- First, place Poly-V belt on the crankshaft pulley, and then on the tensioning pulley, as indicated on the belt run ⇒ Engine; Rep. gr. 13 ; Crankshaft, pistons .
- Tighten the fastening nuts and screws to the specified tightening torque ⇒ [page 41](#) .



#### Note

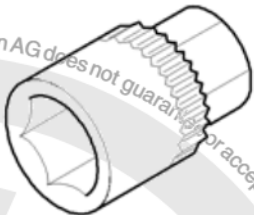
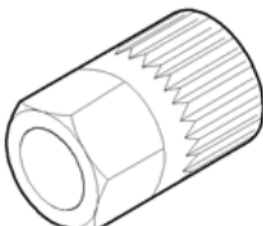
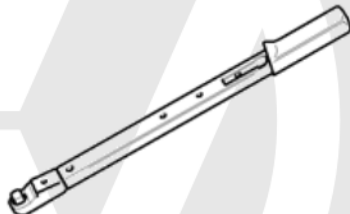
After installation, start the engine and check the belt motion.



### 3.4 Generator (Alternator) -C- - replace the Poly-V belt pulley



**Special tools and workshop equipment required**

<p><b>3310</b></p> 	<p><b>3400</b></p> 
<p><b>V.A.G. 1332</b></p> 	
	<p>Q27-10008</p>

- ◆ Adapter socket - 3310- .
- ◆ Multi-tooth adapter - 3400- .
- ◆ Torque wrench - 40 to 200Nm (fit. 1/2") - VAG 1332- .

**Removal:**

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Remove the Generator (Alternator) - C- ➔ [page 29](#) .
- Install the Generator (Alternator) - C- by its mounting points in a bench vise.

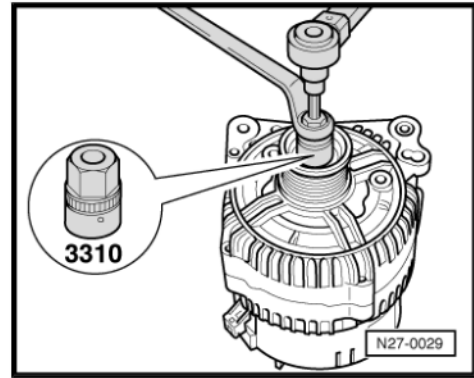


- Release the fastening nut from the Poly-V belt pulley without freewheel unit with the Adapter socket - 3310- , or the Multi-teeth adapter - 3400- for Poly-V belt pulley with freewheel unit.

Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

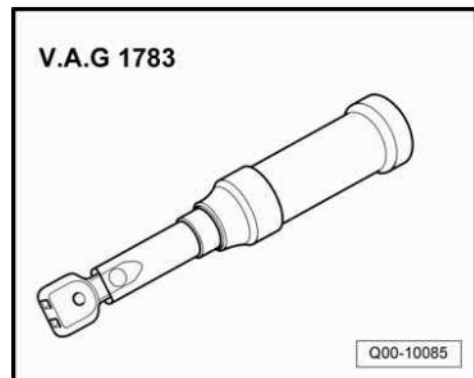
- Tighten the fastening nut with the specified torque  
⇒ [page 41](#) .



### 3.5 Voltage regulator -C1- (Manufacturer Bosch) - disassemble and assemble

Special tools and workshop equipment required

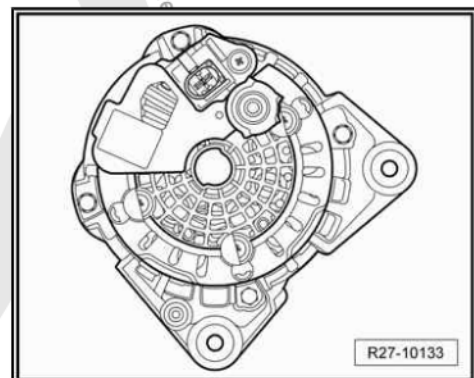
- ♦ Torque wrench 2 to 10 Nm - VAG 1783-



#### 3.5.1 Voltage regulator - C1- - (version 1)

Disassembly:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Remove the Generator (Alternator) - C- ⇒ [page 29](#) .
- Carefully remove protection cover by disengaging it with a screwdriver.



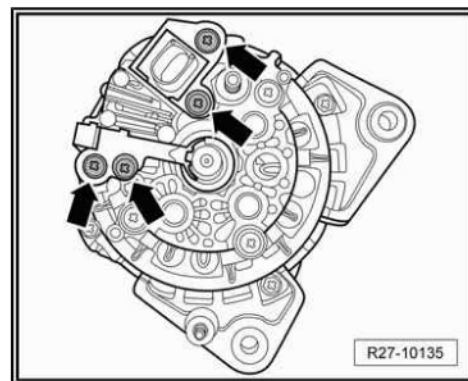


- Loosen the fastening screws -arrows- on the Voltage regulator - C1- .
- Remove the Voltage regulator - C1- .

#### Assembly:

Assembly is performed in the reverse order to disassembly, observing the following:

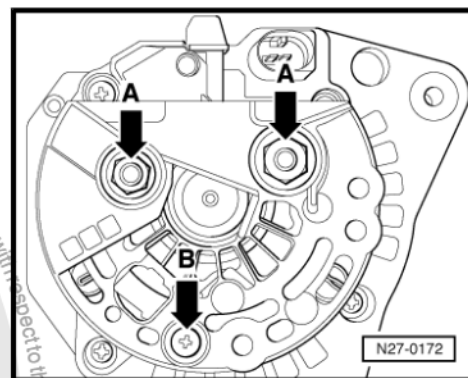
- Tighten the securing nuts and bolts to the specified tightening torque ⇒ [page 41](#) .



### 3.5.2 Voltage regulator - C1- - (version 2)

#### Disassembly:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Remove the Generator (Alternator) - C- ⇒ [page 29](#) .
- Release the fastening nuts -arrows A- and the fastening screw -arrow B- from the protection cover and remove it.

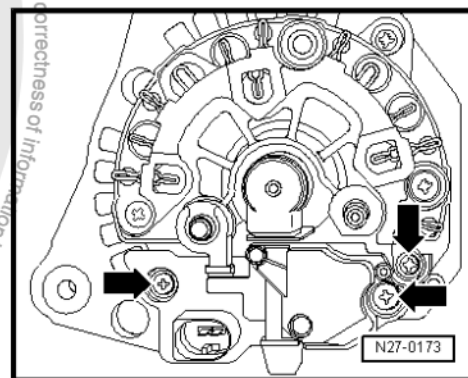


- Loosen the fastening screws -arrows- on the Voltage regulator - C1- .
- Remove the Voltage regulator - C1- .

#### Assembly:

Assembly is performed in the reverse order to disassembly, observing the following:

- Tighten the securing nuts and bolts to the specified tightening torque ⇒ [page 41](#) .

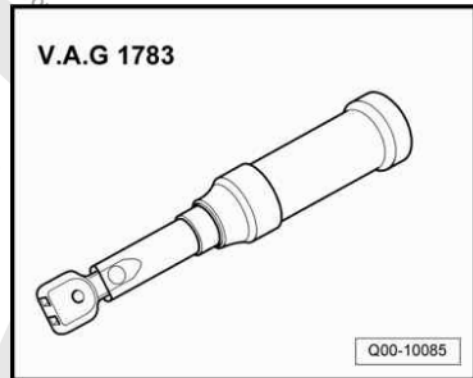


### 3.6 Voltage regulator -C1- (Manufacturer Valeo) - disassemble and assemble

Special tools and workshop equipment required

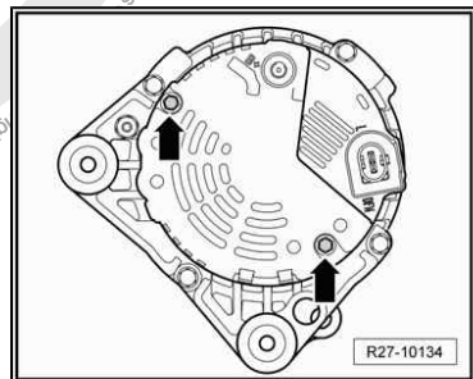


- ◆ Torque wrench 2 to 10 Nm - VAG 1783-

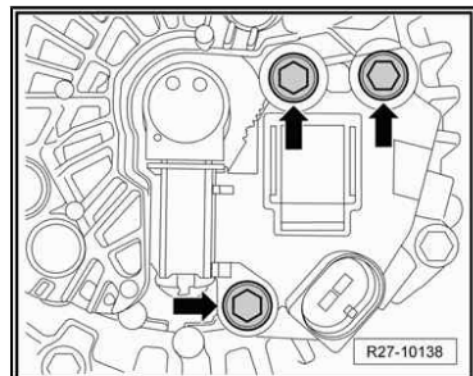


### 3.6.1 Disassembly

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Remove the Generator (Alternator) - C- ➔ [page 29](#) .
- Release the fastening bolts -arrows- and remove the protection cover.



- Loosen the fastening screws -arrows- on the Voltage regulator - C1- .
- Remove the Voltage regulator - C1- .



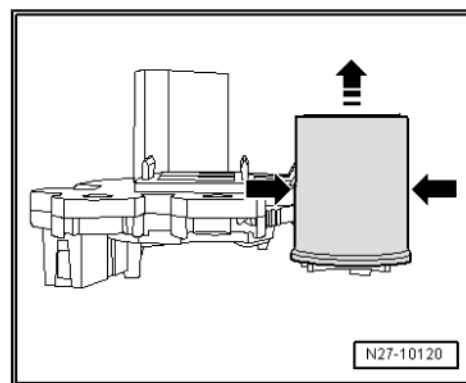
### 3.6.2 Assembly

Assembly is performed in the reverse order to disassembly, observing the following:

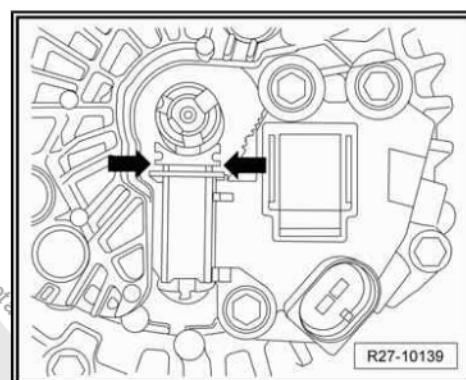




- Release the locks -arrows- and remove the protection cover from the Voltage regulator - C1- .
- Insert the carbon brushes in the Voltage regulator - C1- and assemble on the Generator (Alternator) - C- .
- Tighten the fastening screws to the specified torque  
⇒ [page 41](#) .



- Push the protection cover into the guide rails -arrows- until fitting.



### 3.7 Tightening torques - Alternator

Location	Tightening torques	
Cable (B+) to alternator	M8	15 Nm
Cable support to alternator	M5	4.5 Nm
Alternator's voltage regulator (Bosch, Valeo)	M4	2 Nm
Protection cover to alternator (Bosch)	M5	4.5 Nm
Poly-V belt pulley with freewheel unit to alternator	M10	80 Nm
Idler roller	M10	45 Nm
Poly-V belt pulley without freewheel unit to alternator	M10	65 Nm
Compensation reservoir	M6	10 Nm
Alternator to compact support	M8	23 Nm



## 90 – Gauges, instruments

### 1 Combined instrument

General description:

The Combined instrument - K- has the following components:

- ◆ Control unit with indicator in the combined instrument - J285- .
- ◆ Immobilizer control unit - J362-
- ◆ Speedometer - G21- .
- ◆ Tachometer - G5- .
- ◆ Fuel level indicator - G1-
- ◆ Coolant temperature indicator - G3- .
- ◆ Multi-function indicator.
- ◆ Control light symbols ⇒ [page 48](#) .

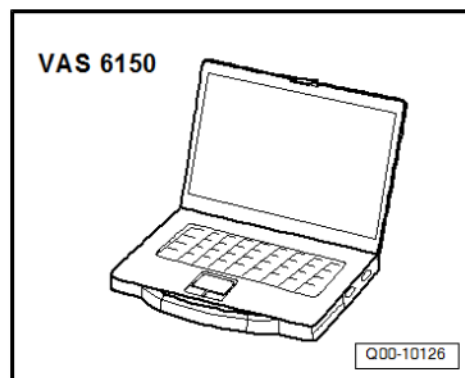
All the light displays are equipped with light emitting diodes (LEDs). No repair work is expected for the Combined instrument - K- . If necessary, replace the entire Combined instrument - K- ⇒ [page 43](#) .

#### 1.1 Locating defects and indicating faults

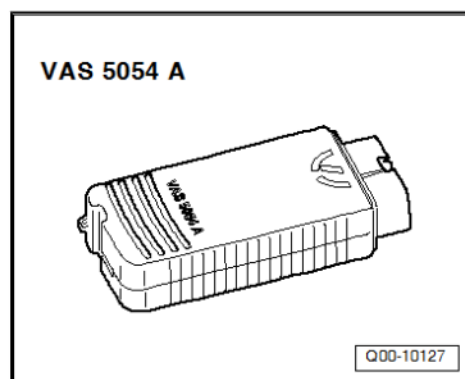
The Combined instrument - K- is equipped with a self-diagnosis function.

To localize faults, you must use the Vehicle diagnosis system and technical information - VAS 5052A- or further equipment.

Diagnostic testing and information system - VAS 6150-



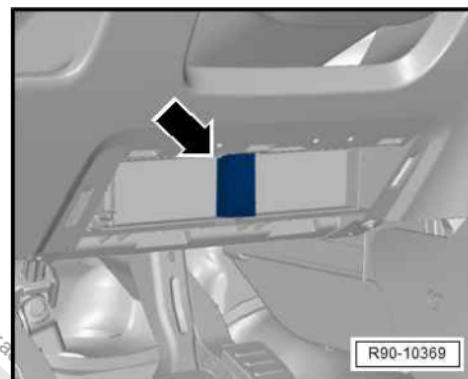
Wireless diagnostic connector - VAS 5054A-







- Connect the Vehicle diagnosis and technical information system - VAS 5052A- or later equipment ➔ General Information; Rep. gr. 97 ; Cables and wire harnesses in the 16-pin diagnose connector - T16- -arrow-.
- Turn the ignition on.
- Turn off all electrical equipment.
- Continue by selecting the desired functions ➔ Vehicle diagnostic tester.



## 1.2 Combined instrument -K- - replace



### WARNING

*When replacing the Combined instrument - K- , refer to the previous unit data with the "Startline" vehicle diagnostics laptop" before removal, and transfer them to the new Combined instrument - K- .*

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ [page 1](#) .*



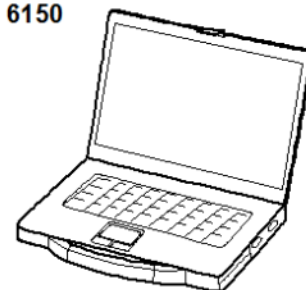
### Note

- ◆ Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .
- ◆ Before removing the Combined instrument - K- , follow the notes and work instructions for troubleshooting.
- ◆ When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.

### Special tools and workshop equipment required

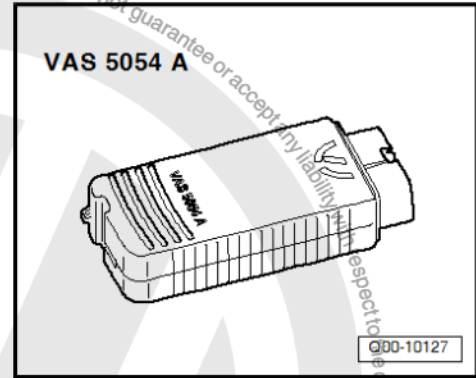
- ◆ Vehicle diagnosis system and technical information - VAS 5052A-
- ◆ Vehicle diagnosis system and technical information - VAS 6150-

VAS 6150





◆ Wireless diagnostic connector - VAS 5054A-

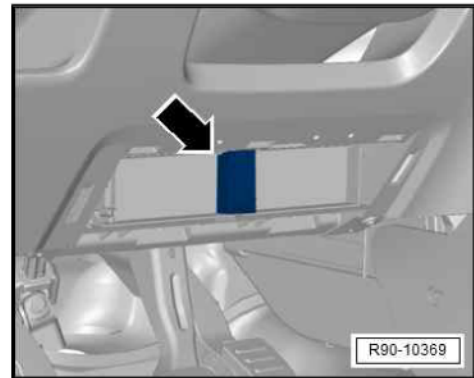


The work sequence "Combined instrument - replace" includes the following works:

- ◆ When installing a new Combined instrument - K- it is necessary to adjust the Combined instrument control unit with indicator - J285- to the different equipment features and corresponding variations relating to each country.
- ◆ To adapt the Immobilizer control unit - J362- to the Engine control unit - J623- the data of the Engine control unit data - J623- must be memorized in the replacement Combined instrument - K- .
- ◆ After installing a new Combined instrument - K- , it is necessary to adapt all keys of the vehicle.

To adapt, you must use the Vehicle diagnosis and technical information system - VAS 5052A- or later equipment.

- Connect the Vehicle diagnosis and technical information system - VAS 5052A- or later equipment ⇒ General Information; Rep. gr. 97 ; Cables and wire harnesses in the 16-pin diagnose connector - T16- -arrow-.
- Turn the ignition on.
- Turn off all electrical equipment.
- Continue by selecting the desired functions ⇒ Vehicle diagnostic tester.



### 1.3 Combined instrument -K- - remove and install



#### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ⇒ [page 1](#) .*



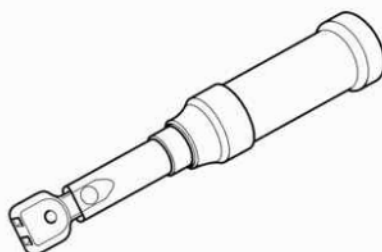
#### Note

- ◆ Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .
- ◆ Before removing the Combined instrument - K- , pay attention to the remarks and work instructions for troubleshooting ⇒ [page 43](#) .
- ◆ When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.

Special tools and workshop equipment required

- ◆ Torque wrench 2 to 10 Nm - VAG 1783-

V.A.G 1783



Q00-10085

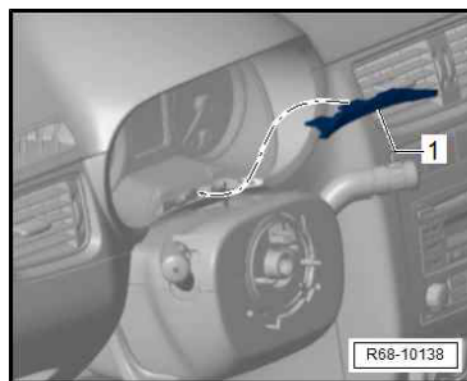
Removal:



#### Note

*It is not necessary to remove the steering wheel. The steering wheel is not shown in order to provide a clearer view.*

- Position the steering wheel with adjustment device totally outwards, and lock it to the lowest position (vehicle with steering position adjustment).
- Carefully remove dashboard finishing -1- ⇒ General body repairs, interior; Rep. gr. 68 ; Internal equipment .



R68-10138

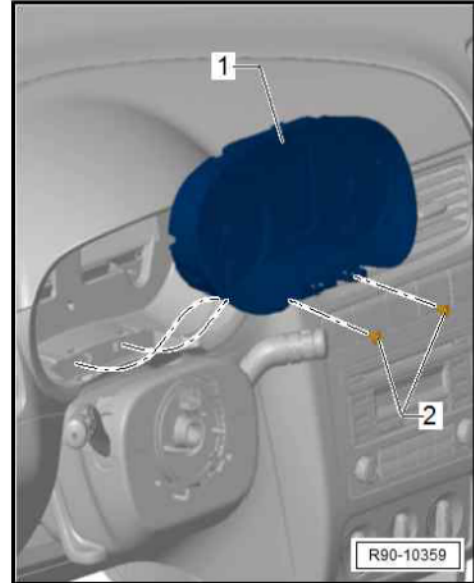


- Loosen the securing screws -2- from the Combined instrument - K- -1-.
- Carefully disengage the Combined instrument - K- and disconnect the connector.
- Remove the Combined instrument - K- .

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Tighten the fastening bolt of the instrument cluster - - to a torque of (1.5-Nm).
- After installing, check the functions and perform the necessary adjustments if the instrument cluster - K- was replaced  
⇒ [page 43](#) .



### 1.4 Combined instrument -K- - description of rear part



#### Note

*No repair work is expected for the Combined instrument - K- .*



1 - Combined instrument - K-

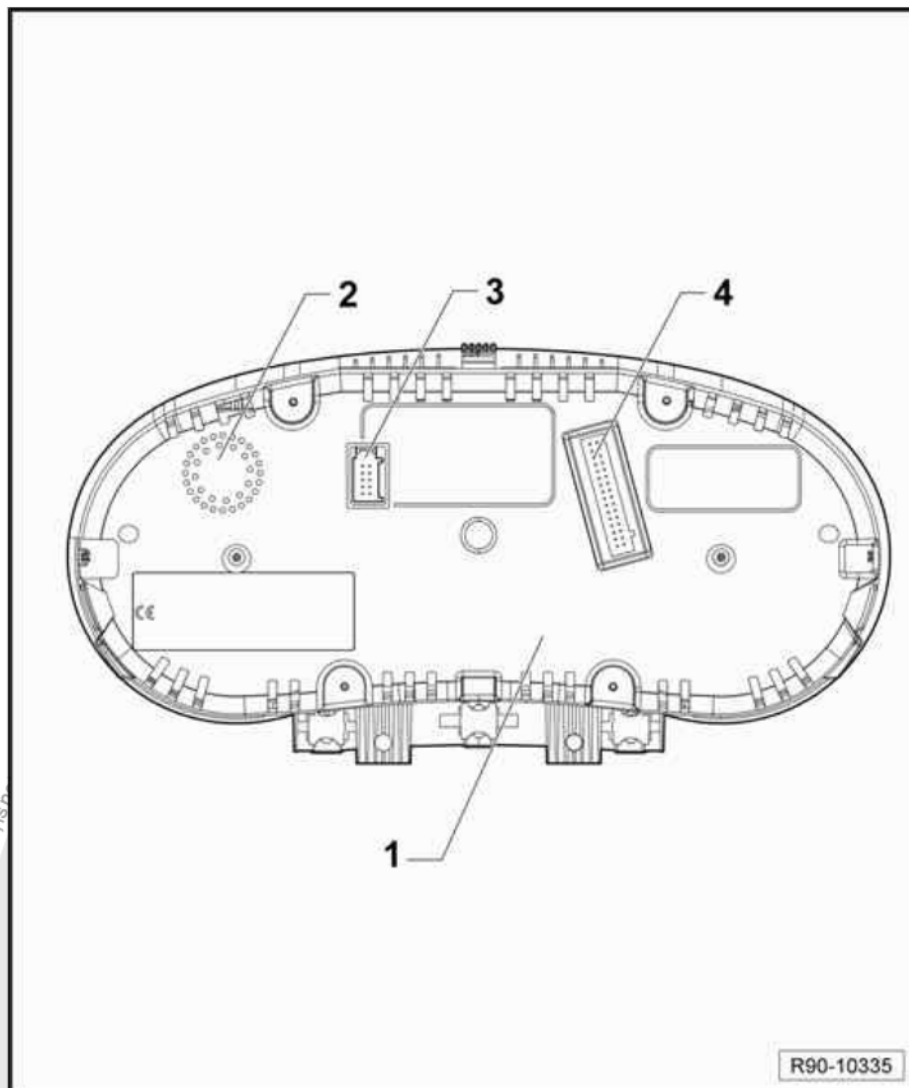
2 - Alarm (sound warning)

3 - 10-pin connector

□ connector occupation  
⇒ [page 47](#) .

4 - 32-pin connector

□ connector occupation  
⇒ [page 47](#) .



## 1.5 Combined instrument -K- - pin assignment

The Combined instrument's - - 32-pole and 10-pole connector pinout is described in the electrical diagrams ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.



## 1.6 Combined instrument -K- - control light symbols

### 1.6.1 MID Version

1 - Coolant temperature control light - K43-

2 - Oil pressure control light - K3-

3 - "E-gas" system failure indicator light - K132-

4 - Not used

5 - Brake system control light - K118-

6 - Airbag control light - K75-

7 - ABS control light - K47-

8 - Warning light - exhaust gases - K83-

□ On-Board Diagnosis (OBD).

9 - Left turn indicators control light - K65-

10 - Odometer - Y4-

11 - Right turn indicators control light - K94-

12 - Immobilizer control light - K117-

13 - Not used

14 - High beam control light - K1-

15 - Rear window heating control light - K10-

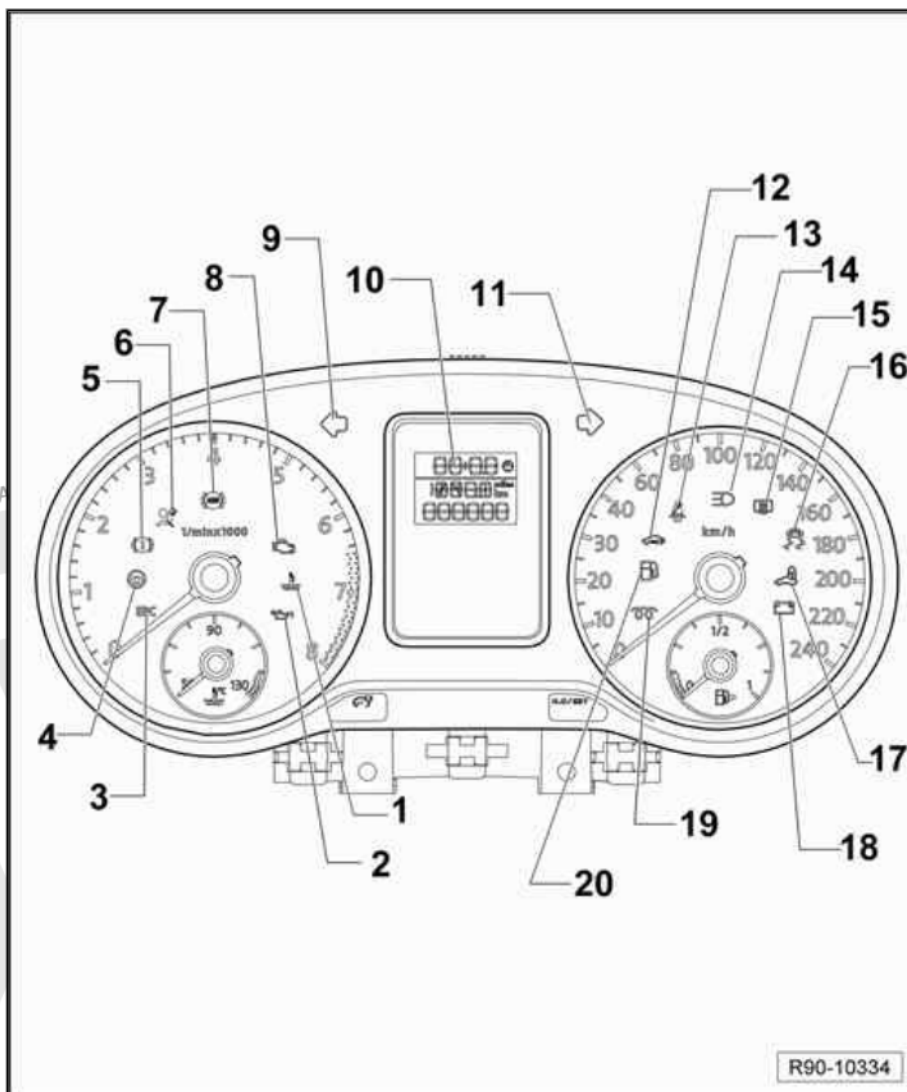
16 - Not used

17 - Control light for the "SAFE" system in the central locking - K133-

18 - Alternator control light - K2-

19 - Not used

20 - Fuel reserve control light - K16-





## 1.6.2 Version HIGH

1 - "E-gas" system failure indicator light - K132-

- ☐ Petrol engine vehicles only.

2 - Not used

3 - Brake system control light - K118-

4 - Airbag control light - K75-

5 - ABS control light - K47-

6 - Warning light - exhaust gases - K83-

- ☐ On-Board Diagnosis (OBD).

7 - Left turn indicators control light - K65-

8 - Display

9 - Right turn indicators control light - K94-

10 - Immobilizer control light - K117-

11 - Not used

12 - High beam control light - K1-

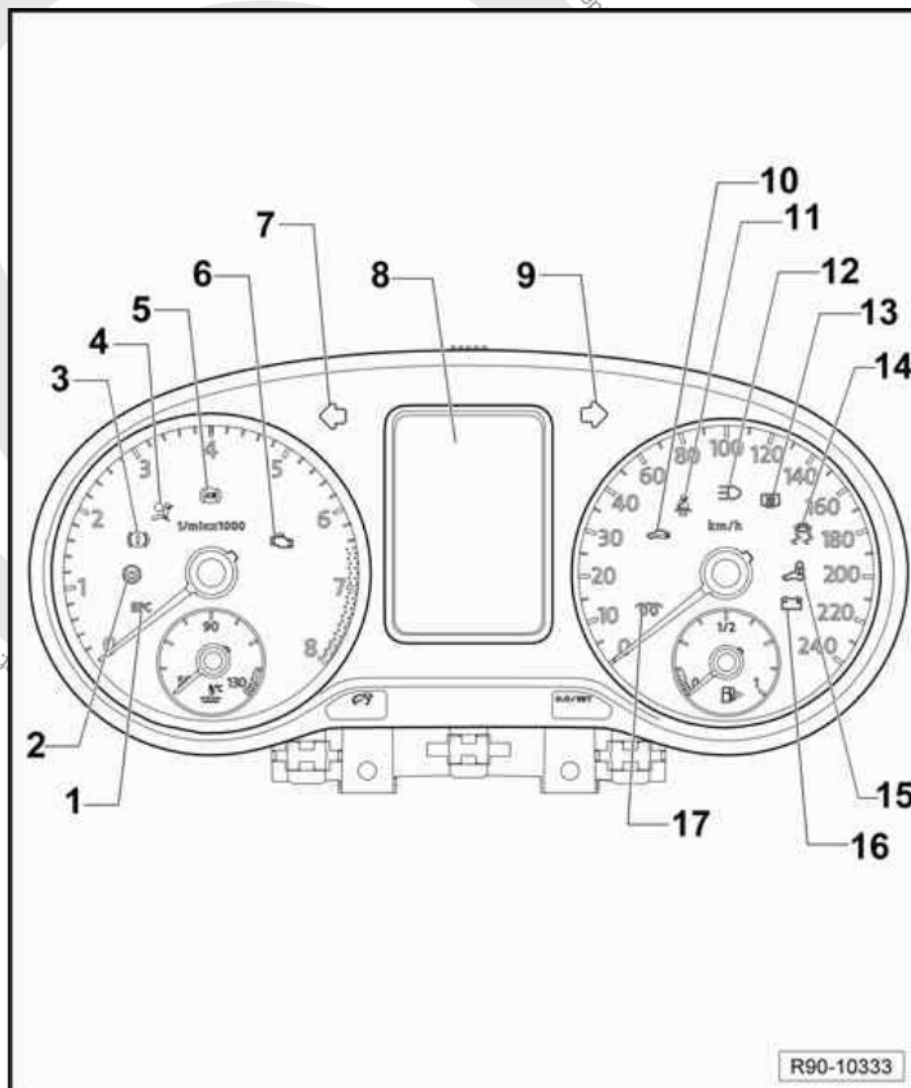
13 - Rear window heating control light - K10-

14 - Not used

15 - Control light for the "SAFE" system in the central locking - K133-

16 - Alternator control light - K2-

17 - Not used







## 2 Service interval indication

The electronic system for the service interval indicator interprets the data from a time counter and two distance counters, and informs the user after a given time interval has elapsed or a given distance has been travelled.

### 2.1 Service interval indication - reset to zero

Please refer to manual ➔ Maintenance ; Booklet 22.1 .



### 3 12 Volt socket

#### 3.1 12 volt socket -U5- - assembly overview

##### 1 - Centre console

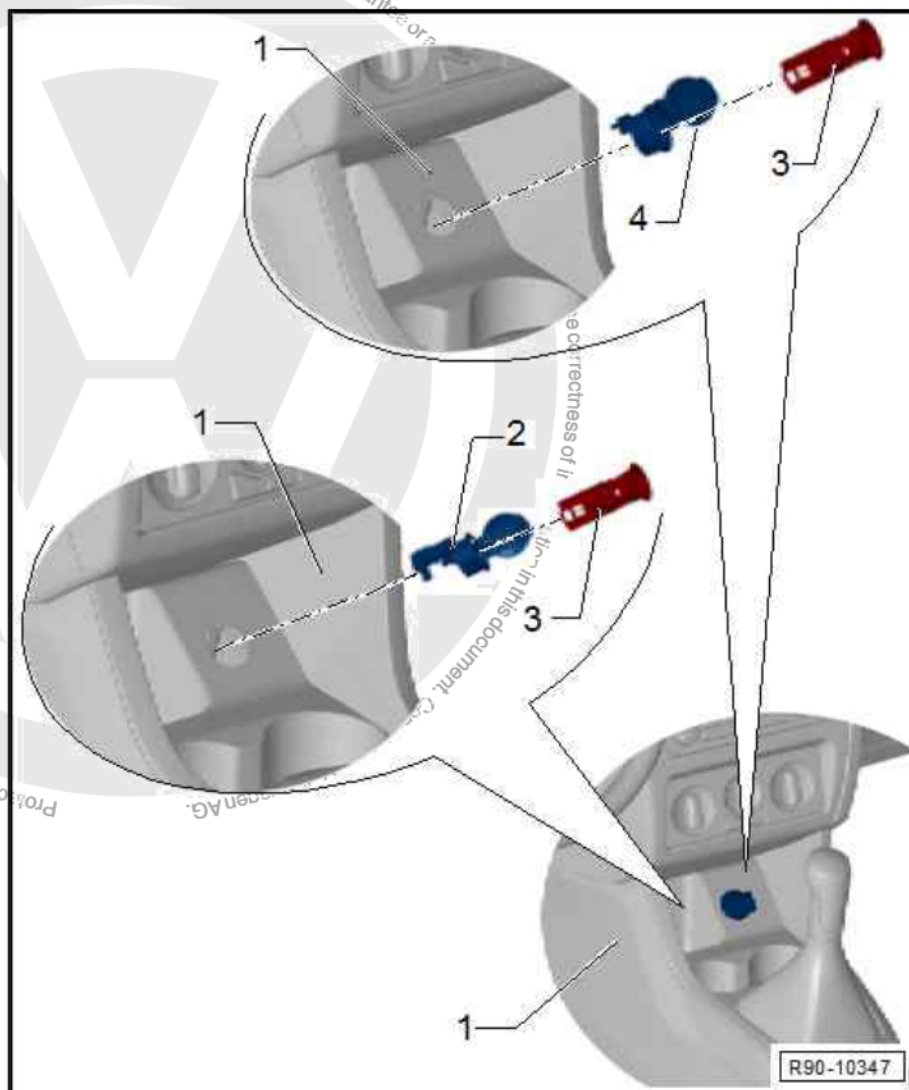
- ☐ Remove and install ⇒  
General body repairs,  
interiors; Rep. gr. 68 ;  
Internal equipment .

##### 2 - Tensioning bushing (with lighting)

##### 3 - 12 Volt socket - U5-

- ☐ Remove and install  
⇒ [page 51](#) .

##### 4 - Tensioning bushing (with-out lighting)



#### 3.2 12 volt socket -U5- - remove and install



##### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ⇒ [page 1](#) .*

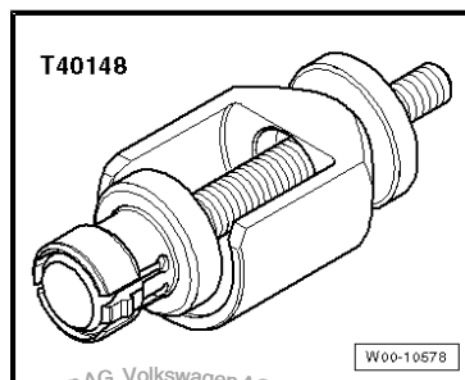


Note

- ♦ Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A-.
- ♦ When the Battery - A- is reconnected, check the vehicle's equipment (radio, clock, electric door locks, power windows, etc.) according to the repair manual and/or use instructions.

Special tools and workshop equipment required

- ♦ Puller - T40148-



Removal:



Note

The tensioning bushing does not need to be removed for removal of the 12 volt socket - U5-. For improved visualization, it is represented outside the instrument panel, without its tensioning bushing.



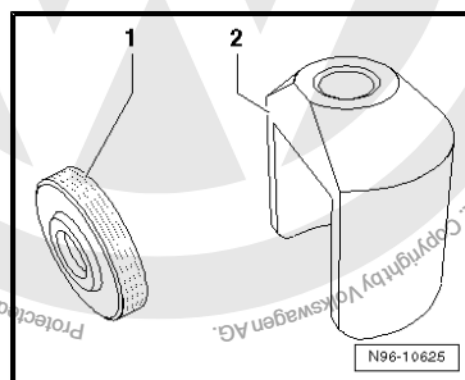
WARNING

- Observe the correct insertion of the Extractor - T40148- in the 12 volt socket - U5-, otherwise the locks will not be disengaged and there is a risk that it will be damaged.



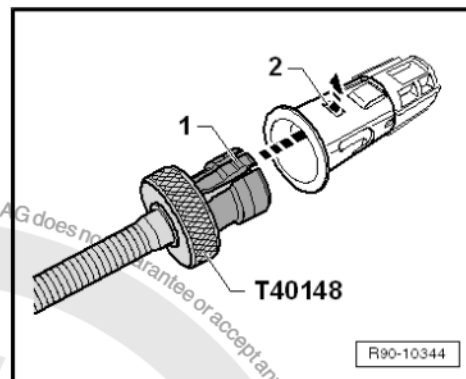
Note

A Wedge - T40148/1- -2- for improved support in the removal of the 12 volt socket - U5-.





Insert the Puller - T40148- according to -arrow- so that the protrusions -1- engage correctly in the notches -2- of the 12 volt socket - U5- .



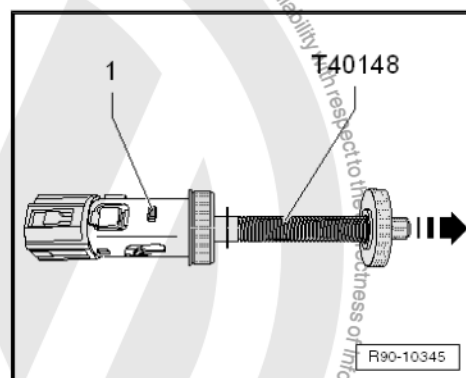
Disengage the 12 volt socket -U5- -1- from the tensioning bushing according to -arrow-.



#### WARNING

- *At the moment of removal of the 12 volt socket - U5- from the instrument panel, observe the compression of the harness of the panel.*

- Carefully remove the 12 volt socket - U5- from the dash panel and disconnect the respective connector.
- In order to remove the 12 volt socket - U5- -2- from the Puller - T40148- press it according to -arrow A- and then turn the area -3- anti-clockwise according to -arrow B-, thus disengaging the protrusions -1-.



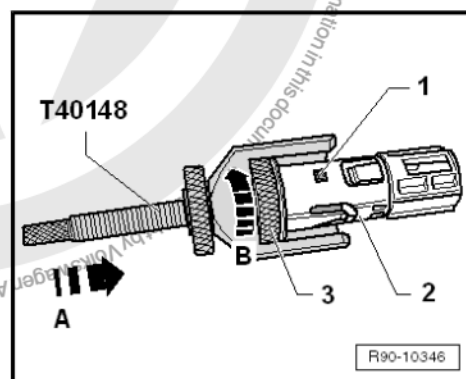
Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

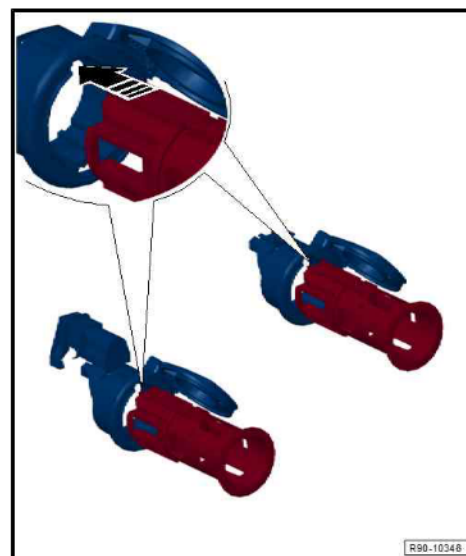


#### Note

*Assembly is carried out similarly for both versions of the tensioning bushing.*



- Observe the correct assembly position in the detail.





### 3.3 Electric socket 2 - 12V -U18- (Fox/Crossfox) - assembly overview

#### 1 - Luggage compartment side trim

- ❑ Remove and install ⇒  
Body - Internal assembly works; Rep. gr. 70 ;  
Lining / insulation .

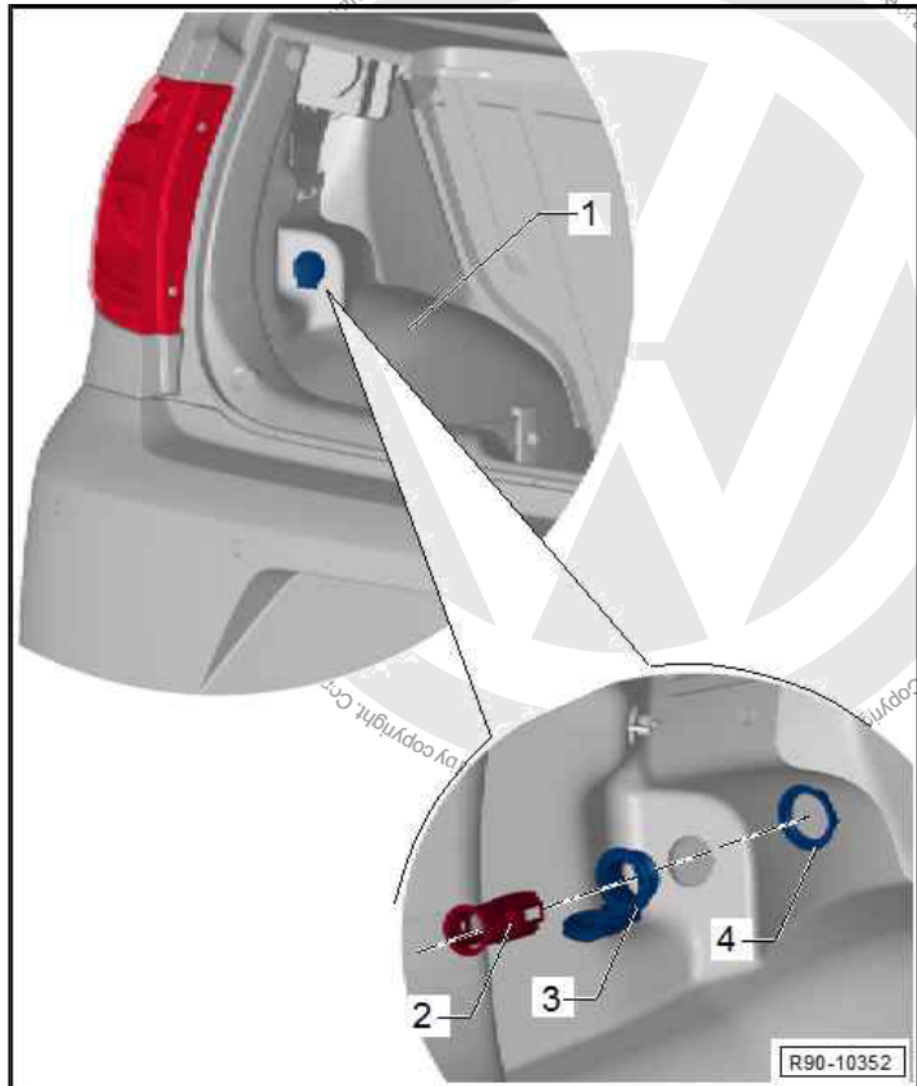
#### 2 - Electrical socket 2 - 12V - U18-

- ❑ Remove and install  
⇒ [page 54](#) .
- ❑ Replace ⇒ [page 55](#) .

#### 3 - Tensioning bushing

#### 4 - Nut

- ❑ Located at rear of lining.
- ❑ 2 Nm.



### 3.4 Electric socket 2 - 12V -U18- (Fox/ Crossfox) - remove and install



#### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ⇒ [page 1](#) .*



#### Note

- ◆ Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .
- ◆ When the Battery - A- is reconnected, check the vehicle's equipment (radio, clock, electric door locks, power windows, etc.) according to the repair manual and/or use instructions.



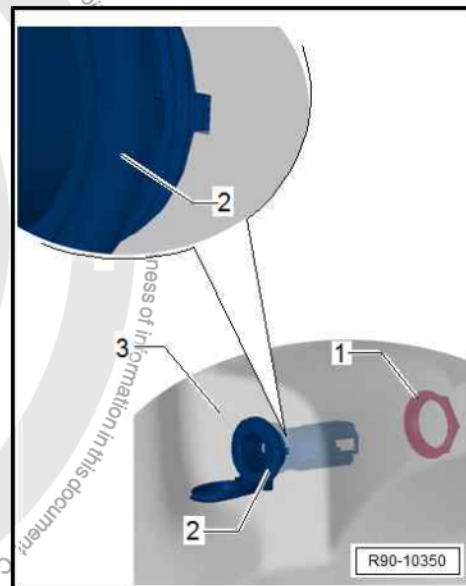
#### Removal:

- Pull the side lining from the luggage compartment-3-.
- Remove the connector from the Electrical socket 2 - 12V - U18-
- Remove the securing nut -1-.
- Remove the Electric socket 2 - 12V - U18- -2- from the lateral lining of the baggage compartment -3-.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Install the Electrical socket 2 - 12V - U18- -2- in the lateral lining of the baggage compartment -3-, following the correct assembly position in the detail.
- Tighten the fastening nuts -1- to a torque of (2 Nm).



### 3.5 Electric socket 2 - 12V -U18- - replace

#### Removal:

- Remove the Electrical socket 2 - 12 V - U18- ➔ [page 54](#) .



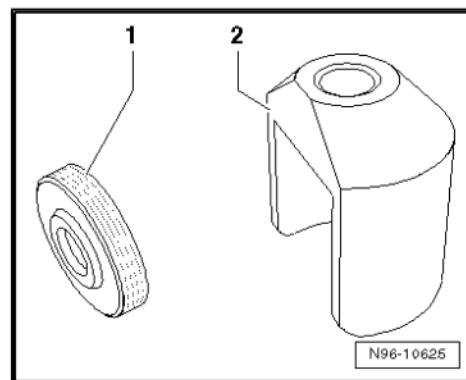
#### WARNING

- *Observe the correct insertion of the Extractor - T40148- in the Electrical socket 2 - 12V - U18- , otherwise the locks will not be disengaged and there is a risk that it will be damaged.*



#### Note

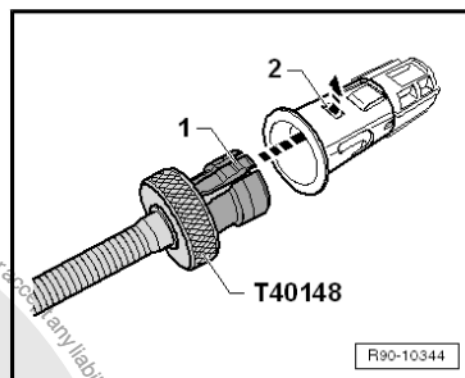
*A Wedge - T40148/1- -2- can be used for improved support in the removal of the Electrical socket - 12 volt - U18- .*



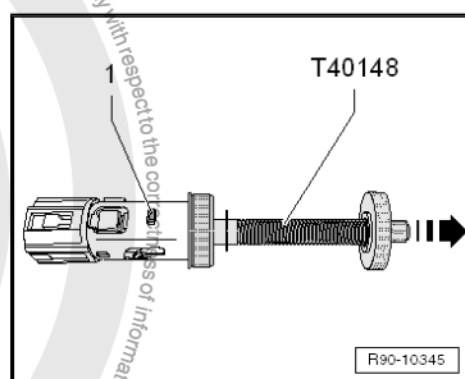




Insert the Puller - T40148- according to -arrow- so that the protrusions -1- engage correctly in the notches -2- of the Electrical socket - 12 volt - U18- .



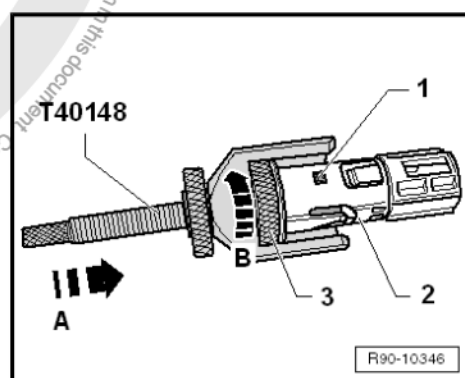
Disengage the Electrical socket - 12 V - U18- -1- from the tensioning pushing according to -arrow-.



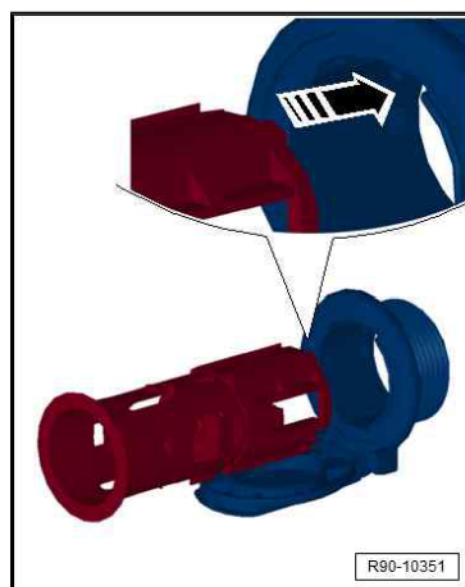
In order to remove the Electrical socket - 12 V - U18- -2- from the Puller - T40148- press it according to -arrow A- and then turn the area -3- anti-clockwise according to -arrow B-, thus disengaging the protrusions -1-.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:



- Observe the correct assembly position in the detail.
- Install the Electrical socket 2 - 12 V - U18- ➔ [page 54](#) .







### 3.6 Electric socket 2 - 12V -U18- (Spacefox/Suran - version 1) - assembly over-view

1 - Electrical socket 2 - 12V - U18-

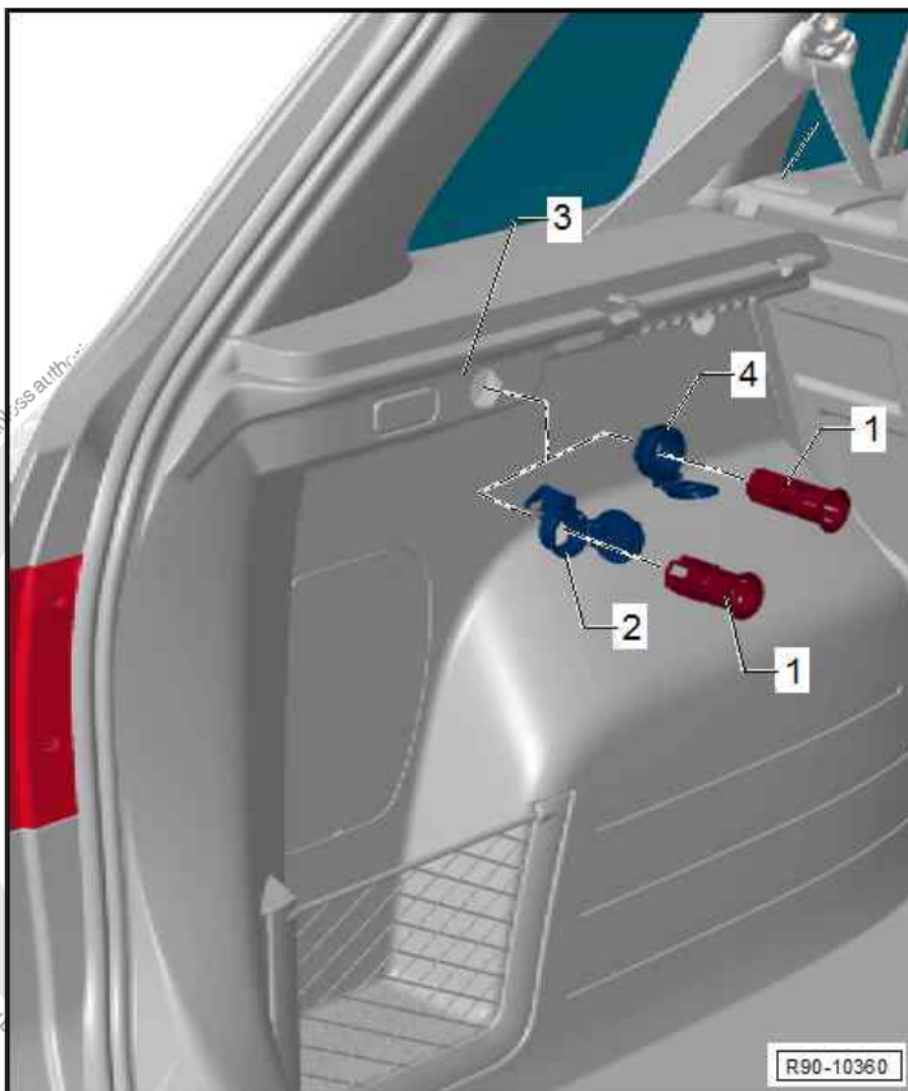
- ☐ Remove and install  
⇒ [page 57](#) .

2 - Tensioning bushing (with lighting)

3 - Luggage compartment side trim

- ☐ Remove and install ⇒  
Body - Internal assembly works; Rep. gr. 70 ;  
Lining / insulation .

4 - Tensioning bushing (without lighting)



### 3.7 Electric socket 2 - 12V -U18- (Spacefox/Suran - version 1) - remove and install



#### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A-  
⇒ [page 1](#) .*

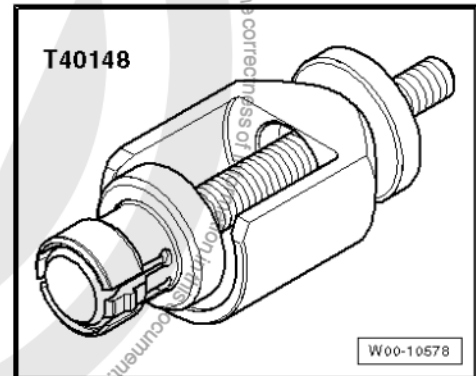


Note

- ♦ Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .
- ♦ When the Battery - A- is reconnected, check the vehicle's equipment (radio, clock, electric door locks, power windows, etc.) according to the repair manual and/or use instructions.

Special tools and workshop equipment required

- ♦ Puller - T40148-



Removal:



Note

The tensioning bushing does not need to be removed for removal of the 2 - 12 volt socket - U18- . The socket is represented outside the lining for better view.



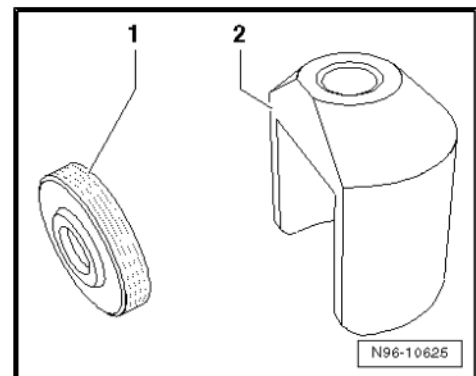
WARNING

- Observe the correct insertion of the Extractor - T40148- in the Electrical socket 2 - 12V - U18- , otherwise the locks will not be disengaged and there is a risk that it will be damaged.



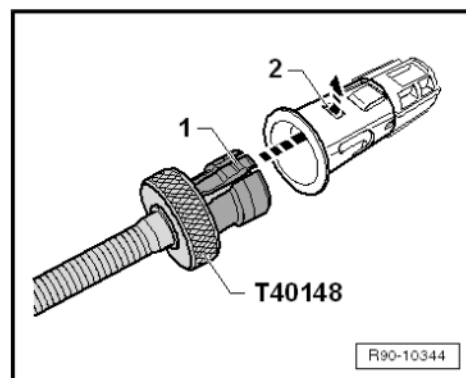
Note

A Wedge - T40148/1- -2- can be used for improved support in the removal of the Electrical socket - 12 volt - U18- .





- Insert the Puller - T40148- according to -arrow- so that the protrusions -1- engage correctly in the notches -2- of the Electrical socket - 12 volt - U18- .



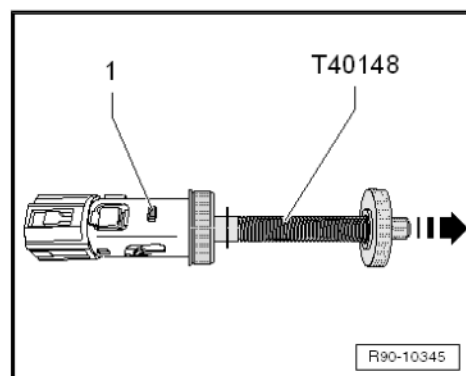
- Disengage the Electrical socket - 12 V - U18- -1- from the tensioning bushing according to -arrow-.



#### WARNING

- *When removing the 2 volt socket - U18- from luggage compartment side lining, observe the length of its harness.*

- Remove the Electrical socket 2 - 12V - U18- cautiously from luggage compartment side lining, and disconnect its connector.



- In order to remove the Electrical socket - 12 V - U18- -2- from the Puller - T40148- press it according to -arrow A- and then turn the area -3- anti-clockwise according to -arrow B-, thus disengaging the protrusions -1-.

#### Installation:

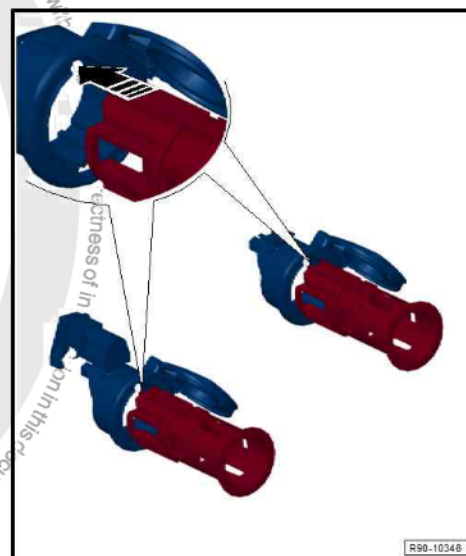
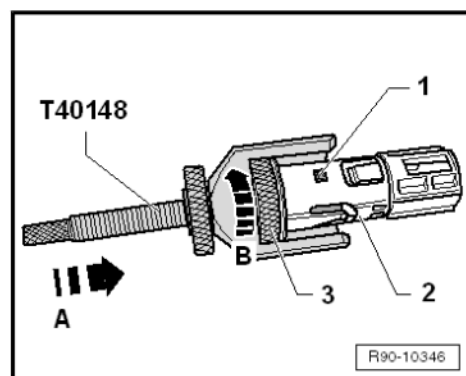
Installation is performed in reverse sequence to that of removal, observing the following:



#### Note

*Assembly is carried out similarly for both versions of the tensioning bushing.*

- Observe the correct assembly position in the detail.





### 3.8 Electric socket 2 - 12V -U18- (Spacefox/Suran - version 2) - assembly over-view

1 - Nut

- ☐ Located at rear of lining.
- ☐ 2 Nm.

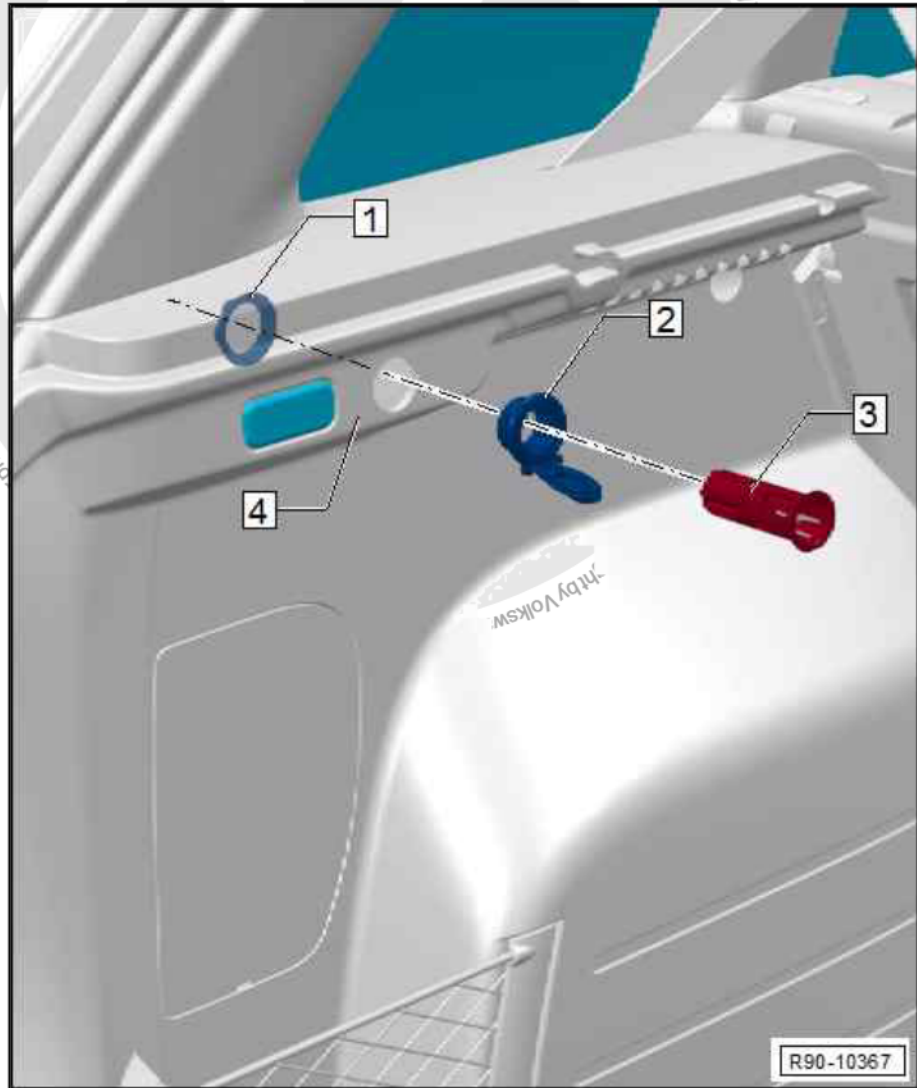
2 - Tensioning bushing

3 - Electrical socket 2 - 12V - U18-

- ☐ Remove and install [⇒ page 60](#) .
- ☐ Replace [⇒ page 61](#) .

4 - Luggage compartment side trim

- ☐ Remove and install [⇒](#) Body - Internal assembly works; Rep. gr. 70 ; Lining / insulation .



### 3.9 Electric socket 2 - 12V -U18- (Spacefox/ Suran - version 2) - remove and install



**WARNING**

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - [A- ⇒ page 1](#) .*



**i** Note

- ◆ Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .
- ◆ When the Battery - A- is reconnected, check the vehicle's equipment (radio, clock, electric door locks, power windows, etc.) according to the repair manual and/or use instructions.

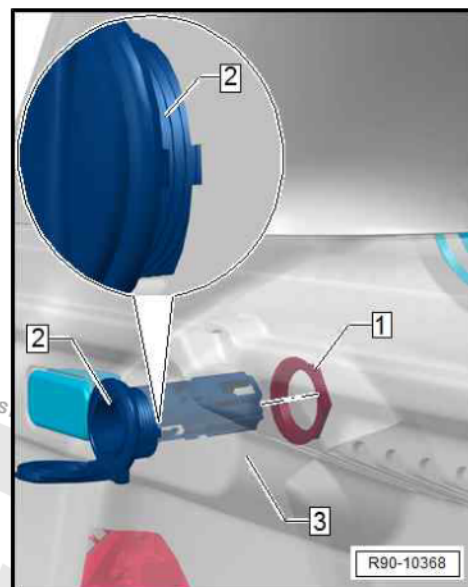
Removal:

- Remove the side luggage compartment lining -3- ➔ General body repairs, interior; Rep. gr. 70 ; Lining/insulation .
- Remove the connector from the Electrical socket 2 - 12V - U18- .
- Remove the securing nut -1-.
- Remove the Electric socket 2 - 12V - U18- -2- from the lateral lining of the baggage compartment -3-.

Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Install the Electrical socket 2 - 12V - U18- -2- in the lateral lining of the baggage compartment -3-, following the correct assembly position in the detail.
- Tighten the fastening nuts -1- to a torque of (2 Nm).



### 3.10 Electric socket 2 - 12V -U18- - replace

Removal:

- Remove the Electrical socket 2 - 12 V - U18- ➔ [page 60](#) .

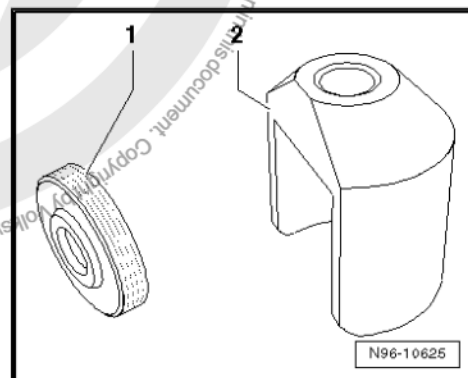


**WARNING**

- Observe the correct insertion of the Extractor - T40148- in the Electrical socket 2 - 12V - U18- , otherwise the locks will not be disengaged and there is a risk that it will be damaged.

**i** Note

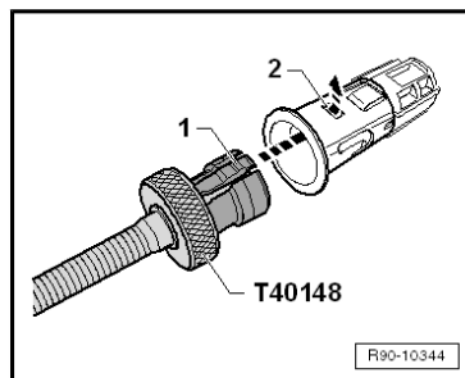
A Wedge - T40148/1- -2- can be used for improved support in the removal of the Electrical socket - 12 volt - U18- .



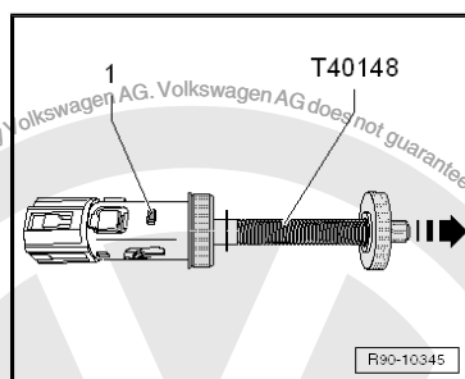




- Insert the Puller - T40148- according to -arrow- so that the protrusions -1- engage correctly in the notches -2- of the Electrical socket - 12 volt - U18- .



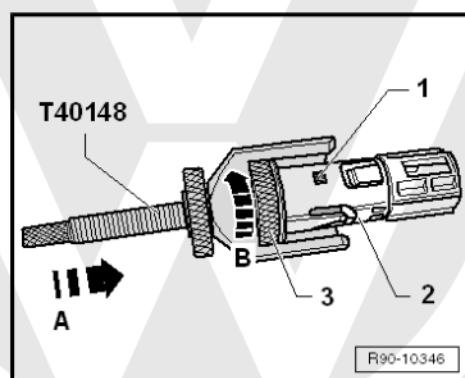
- Disengage the Electrical socket - 12 V - U18- -1- from the tensioning bushing according to -arrow-.



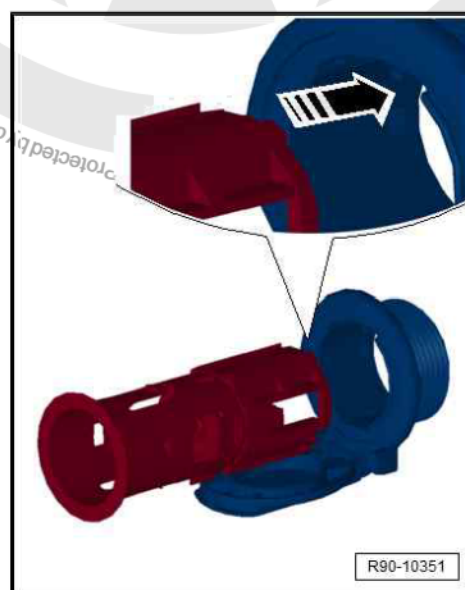
- In order to remove the Electrical socket - 12 V - U18- -2- from the Puller - T40148- press it according to -arrow A- and then turn the area -3- anti-clockwise according to -arrow B-, thus disengaging the protrusions -1-.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:



- Observe the correct assembly position in the detail.
- Install the Electrical socket 2 - 12 V - U18- ➔ [page 60](#) .







## 92 – Windscreen wash/wipe system

### 1 Windscreen wiper system



#### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ⇒ [page 1](#).*



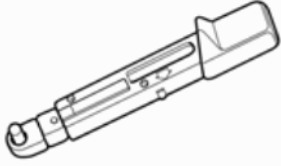
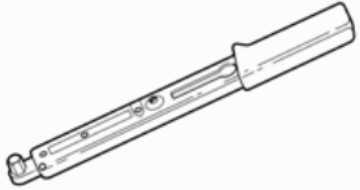
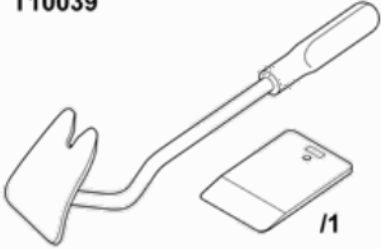
#### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A-.*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A-, earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*





Special tools and workshop  
equipment required

<b>VAG 1410</b> 	<b>VAG 1331</b> 
<b>T10039</b> 	
	<b>Q92-10004</b>

- ◆ Torque wrench - 4 to 20Nm (fit. 3/8") - VAG 1410-
- ◆ Torque wrench - 5 to 50 Nm (fit. 1/2") - VAG 1331-
- ◆ Lever - T 10039-



## 1.1 Windscreen wiper system - assembly overview

### 1 - Windscreen wiper blade

- ☐ Remove and install (version 1) ⇒ [page 65](#) .
- ☐ Remove and install (version 2) ⇒ [page 66](#) .
- ☐ Adjust the application angle ⇒ [page 71](#) .

### 2 - Windscreen wiper arm

- ☐ Remove and install ⇒ [page 66](#) .
- ☐ Adjust the resting position ⇒ [page 71](#) .

### 3 - Protection covers

### 4 - Hexagonal nut

- ☐ 18 Nm.

### 5 - Bolts

- ☐  $5 \pm 0.5$  Nm.

### 6 - Mounting (bushing) for the mechanism support

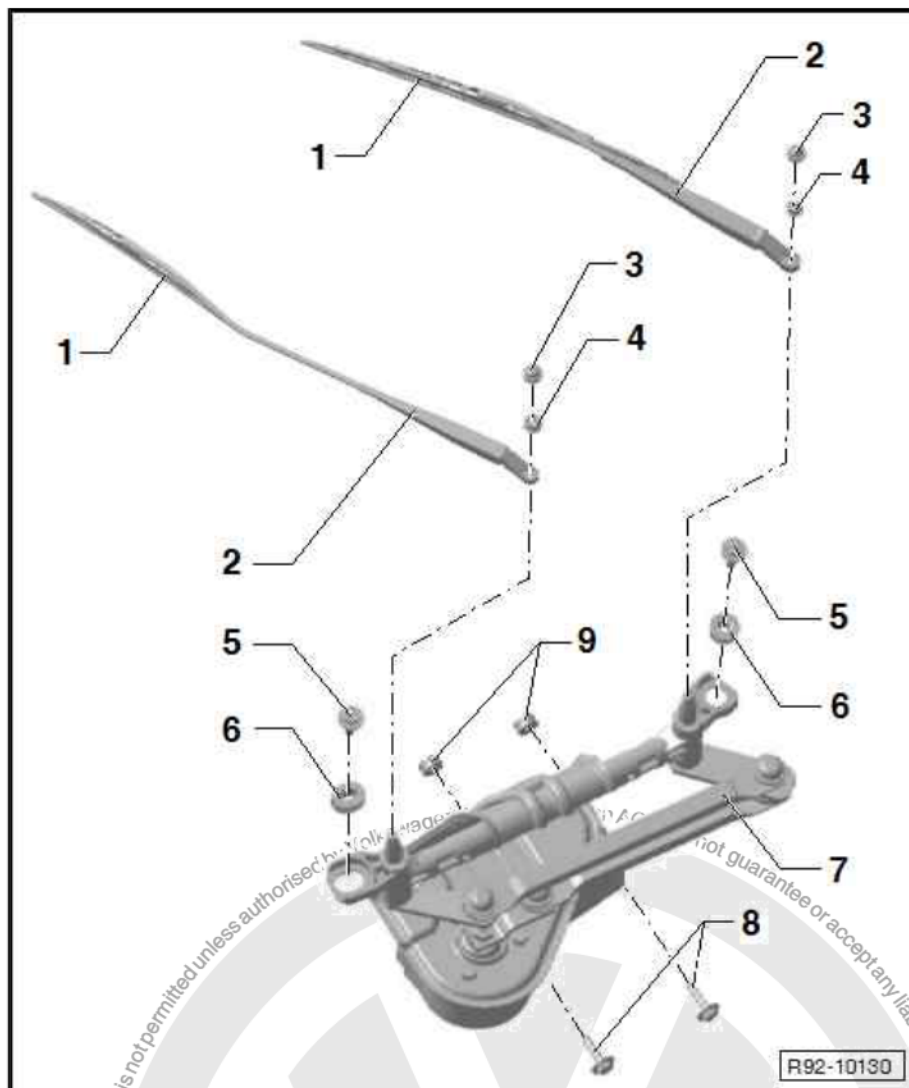
### 7 - Windscreen wiper mechanism

- ☐ Remove and install ⇒ [page 69](#) .

### 8 - Bolts

- ☐  $5 \pm 0.5$  Nm.

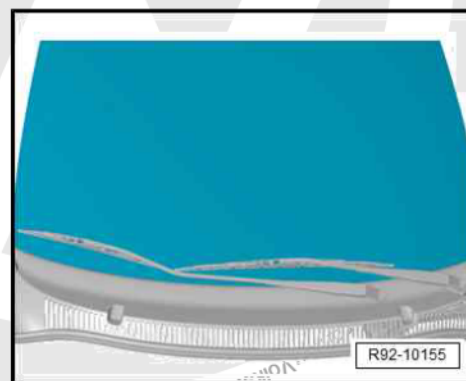
### 9 - Mounting (bushing) for the mechanism support



## 1.2 Windscreen wiper blade (version 1) - remove and install

### Removal:

- Raise the windscreen wiper arm.

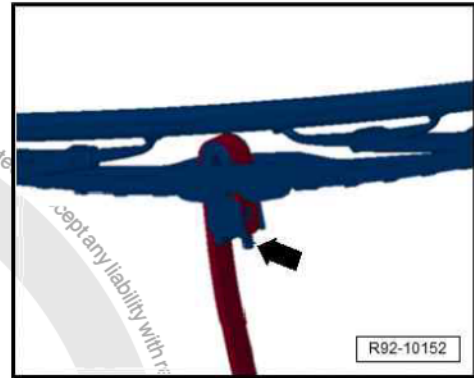




- Press the blade lock -arrow- and pull it down towards the windscreen wiper arm.
- Release the blade from the windscreen wiper arm, and remove it.

Installation:

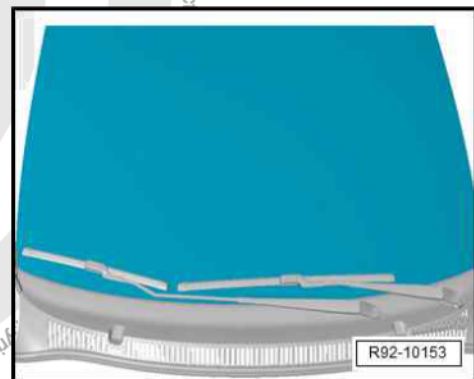
Installation is performed in reverse sequence to the removal.



### 1.3 Windscreen wiper blade (version 2) - remove and install

Removal:

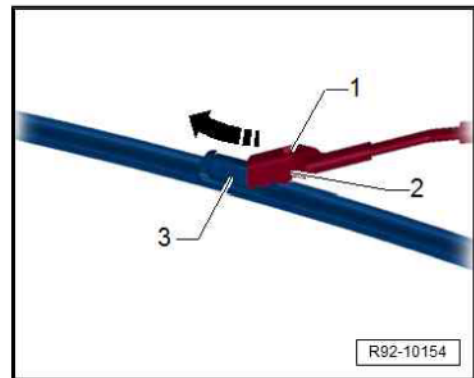
- Raise the windscreen wiper arm.



- Press button -1- and pull the wiper blade support -3- removing it in the direction of the -arrow- wiper arm -2- movement.

Installation:

Installation is performed in reverse sequence to the removal.



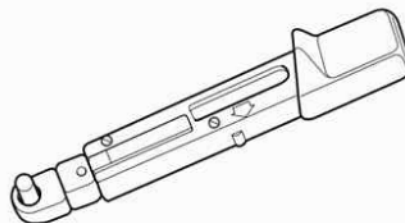
### 1.4 Windscreen wiper blade and arm set - remove and install

Special tools and workshop equipment required



- ◆ Torque wrench - 4 to 20Nm (fit. 3/8") - VAG 1410-

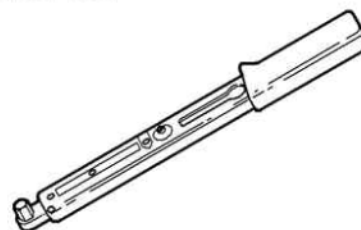
**V.A.G 1410**



Q00-10086

- ◆ Torque wrench - 5 to 50 Nm (fit. 1/2") - VAG 1331-

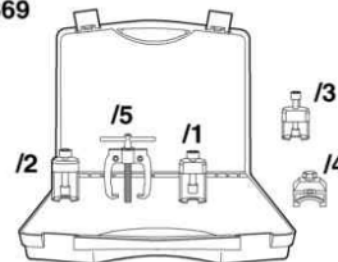
**V.A.G 1331**



Q00-10065

- ◆ Puller - T10369/1- or Geodre mini-puller - 8562-1-

**T10369**



W00-10632

#### Removal:

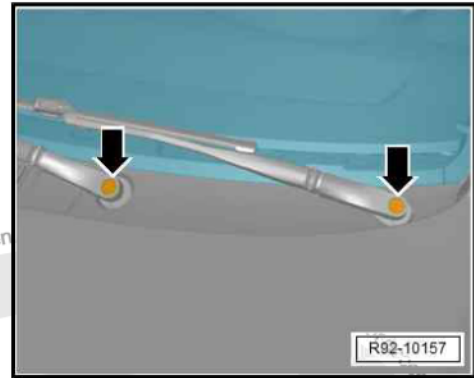


#### Note

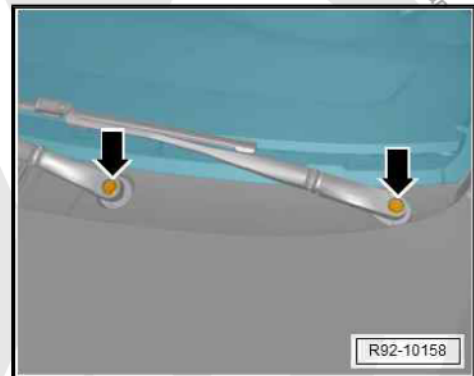
*Before removing the windscreen wiper arms, please check if the Windscreen wiper engine - V- is in rest position. This is the only way to adjust the correct arm resting position during the installation.*



- Remove the protection covers carefully -arrows- with a screw-driver.



- Loosen fastening nuts -arrows-, but do not remove them completely.

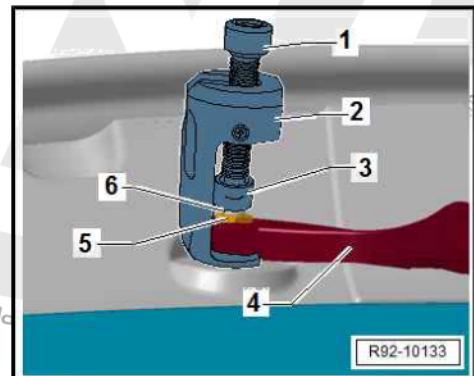


- Fit the Puller - T10369/1- -2- on the windscreen wiper arm -4-.



#### WARNING

*Take care that the Puller - T10369/1- -2- is fit adequately on the windscreen wiper arm -4-, so that it does not damage the drive axle -6-.*



- Support the lower base of the fuse -3- on the drive axle -6- of the windscreen wiper arm -4-.
- Turn the fuse -1- clockwise, until the windscreen wiper arm -4- is released from the drive axle -6-.
- Remove the Puller - T10369/1- -2-, remove the securing nut -5- and remove the windscreen wiper arm -4-.

#### Installation:

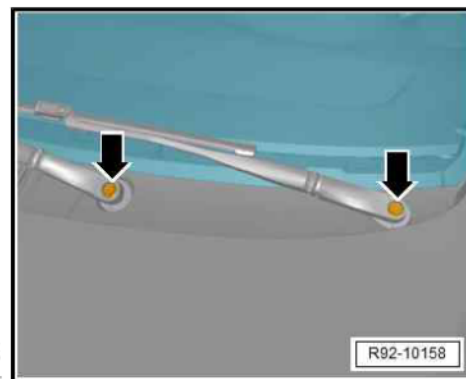
Installation is performed in reverse sequence to that of removal, observing the following:

- Fit the windscreen wiper arms near its resting positions and tighten slightly the fastening nuts.
- Adjust the blades' resting position ⇒ [page 71](#) .





- Tighten the securing nuts -arrows- to a (18 Nm) torque.
- Install the protection covers.



## 1.5 Windscreen wiper mechanism - remove and install

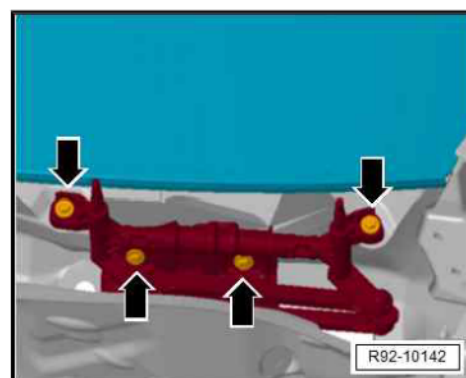
### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Remove the windscreen wiper arm and blade set ➔ [page 66](#) .
- Remove the lower lining of the windscreen ➔ General body repairs, exterior; Rep. gr. 66 ; External equipment .
- Remove fastening screws -arrows- from the windscreen wiper mechanism assembly.
- Disengage the Windscreen wiper motor - V- connector.
- Remove the windscreen wiper mechanism assembly from its housing.

### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Tighten fastening screws to the windscreen wiper mechanism assembly with (5-Nm) torque.



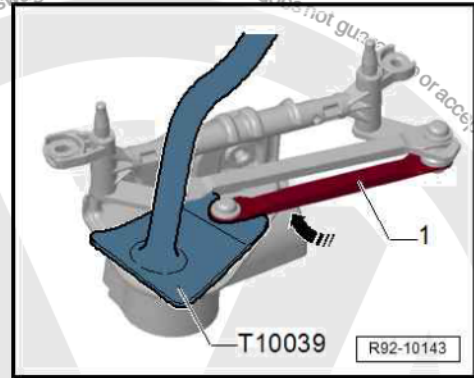
## 1.6 Windscreen wiper motor -V- - disassemble and assemble

### Disassembly:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Remove the windscreen wiper arm and blade set ➔ [page 66](#) .
- Remove the windscreen wiper mechanism ➔ [page 69](#) .



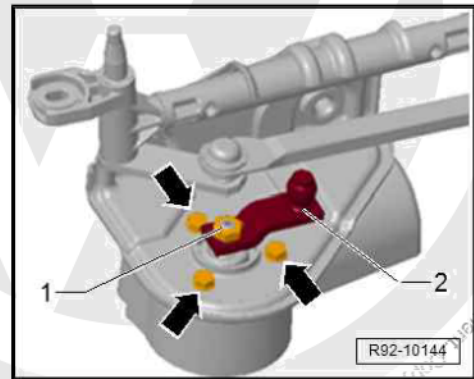
- Disengage the drive stem -1- towards -arrow- from shaft, by using the Lever - T 10039- .



- Remove the securing nut -1- and remove the bracket -2- from the Windscreen wiper engine - V- shaft.
- Loosen the engine fastening screws -arrows- from the windscreen wiper mechanism assembly.
- Remove the Windscreen wiper motor - V- from its housing.

#### Assembly:

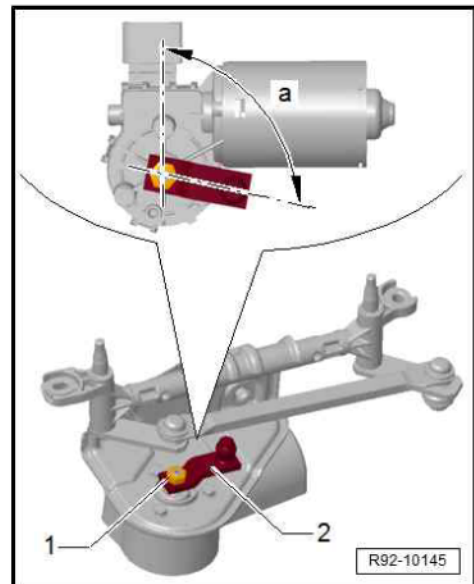
Assembly is performed in the reverse order to disassembly, observing the following:



#### Note

*Set the Windscreen wiper motor - V- in its rest position.*

- Position the Windscreen wiper motor - V- on the windscreen wiper mechanism assembly and tighten the securing bolts to a (9-Nm) torque.
- Install the shaft support -2- so that the measure -a- is  $100^{\circ}44' \pm 5^{\circ}$  and tighten the fastening nut -1- to (18-Nm) torque.





## 1.7 Windscreen wiper blade resting position - adjust

### 1.7.1 Driver's and passenger's side

The measurement -a- between the edge of the right windscreen wiper blade and the water reflector should be  $38 \pm 5$  mm.

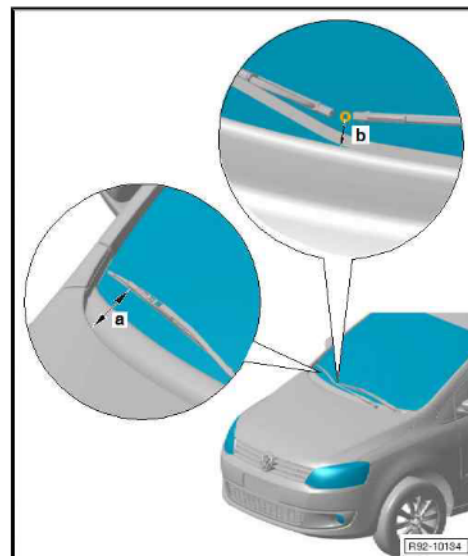
The measurement -b- between the aligned edges of the windscreen wiper blades and the water reflector should be 25 mm.



#### Note

*There are vehicles with reference of resting position of blades on windscreen glass, and this replaces measure -b-.*

- If necessary, adjust the windscreen wiper blade resting position by releasing and moving the wiper arm/blade assembly.
- Remove the windscreen wiper arm/blade assembly  
⇒ [page 66](#).



## 1.8 Blade application angle on windscreen - adjust

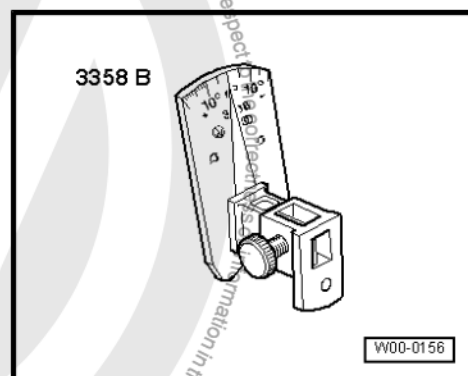


#### WARNING

*Only check the blade application angle when the wipers vibrate or make noises.*

Special tools and workshop equipment required

- ◆ Adjustment device - 3358B-



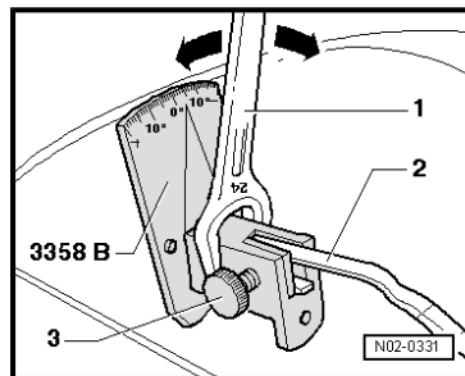
#### Note

*Valid only for vehicles with windscreen wiper blade (version 1).*

- Adjust the resting position of the windscreen wiper arms  
⇒ [page 71](#).

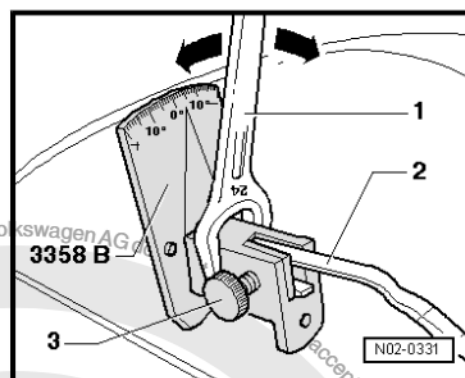


- Remove the blades from the windscreen wiper arms  
⇒ [page 65](#) .
- Place the windscreen wiper arm-2- on the Adjustment device - 3358B- and fasten it with the screw -3-.
- Check the application angle according to the following table:



Application angle (nominal values)	
	Vehicles with left-hand steering wheel
Driver's side	- 5.0°
Passenger side	- 5.0°
Tolerance	± 2°

- If necessary, adjust the application angle to the nominal value as explained below:
- Using a SW24 spanner -1-, tilt the windscreen wiper arm -2- according to the nominal value -arrows-.
- Release the windscreen wiper arm -2- from the Adjustment device - 3358B- and fasten it again with the screw -3-.
- Compare the adjusted value with that given in the table. If necessary, repeat the operation until you reach the nominal value.
- Remove the Adjustment device - 3358B- and install the windscreen wiper blade ⇒ [page 65](#) .
- After adjusting, check the windscreen wiper operation for occasional trembling movements.



## 1.9 Rain and light sensor -G397- - remove and install



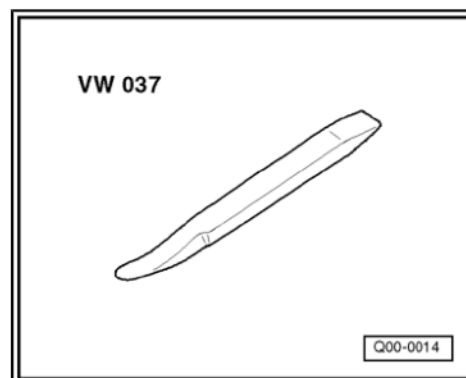
### Note

- ♦ If the Rain sensor and photo sensor - G397- is removed from its support in perfect conditions (e.g. when replacing windscreen), it can be reinstalled
- ♦ Store the Rain and light sensor - G397- and keep it clean until the new installation, by preventing the padded silicone coupling from being soiled

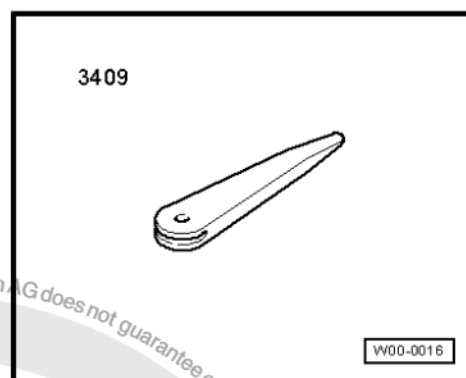
Special tools and workshop equipment required



- ◆ Spatula - VW 037- or

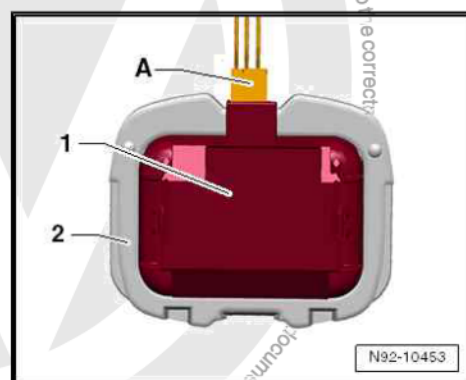


- ◆ Wedge - 3409-



#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery -A- ⇒ [page 1](#) .
- Remove the rear-view mirror ⇒ General body repairs, interior; Rep. gr. 68 ; Internal equipment .
- Disconnect connector -A- from the Rain and light sensor - G397- -1-.







- Remove the Rain and light sensor - G397- -1- of the support-2-, with the help of the Spatula - VW 037- or the Wedge - 3409- , by lifting it, in a lever movement on the recess -3-.



Note

*During removal, do not lift only the upper lining of the Rain and light sensor - G397- , but the entire set.*

Installation:

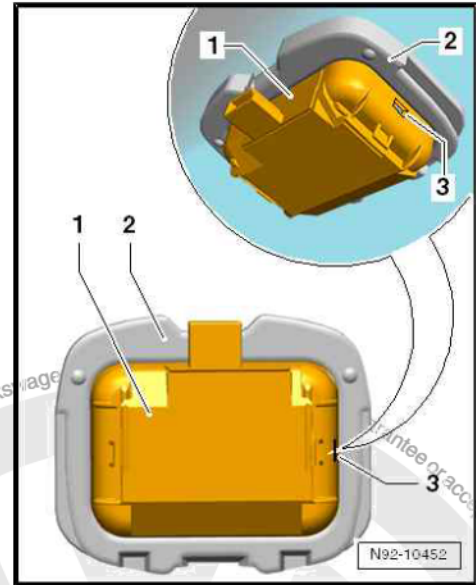
Installation is performed in reverse sequence to that of removal, observing the following:

- Clean properly the windscreen by inside the support with isopropanol (isopropyl ethanol).
- If required, remove, the protective cap from the new Rain and light sensor - G397- .



Note

- ◆ Pay attention in order not to soil the surface (padded coupling) of the Rain and light sensor - G397- during assembly
- ◆ When the surface (padded coupling) of the Rain sensor - G397- is soiled, it may be occasionally cleaned "by affixing" and "detaching" one or more adhesive tape stripes
- ◆ After disassembly, no bubbles must remain between the windscreen and the padded coupling of the Rain and light sensor - G397-







## 2 Windscreen washer system



### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ page 1.*



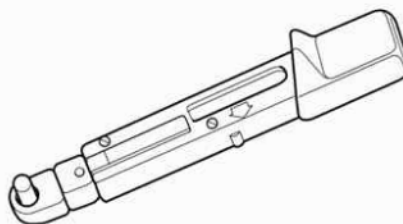
### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A-.*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A-, earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

Special tools and workshop equipment required

- ◆ Torque wrench - 4 to 20Nm (fit. 3/8") - VAG 1410-

**V.A.G 1410**



Q00-10086

### 2.1 Windscreen washer system - assembly overview



#### 1 - Spray nozzles

- ☐ Replace ➔ [page 78](#) .
- ☐ Adjust ➔ [page 78](#) .

#### 2 - Windscreen washer pump connector Rear window washer pump - V5- and/or Rear window washer pump - V13-

#### 3 - Windscreen washer pump - V5- and/or Rear window washer pump - V13-

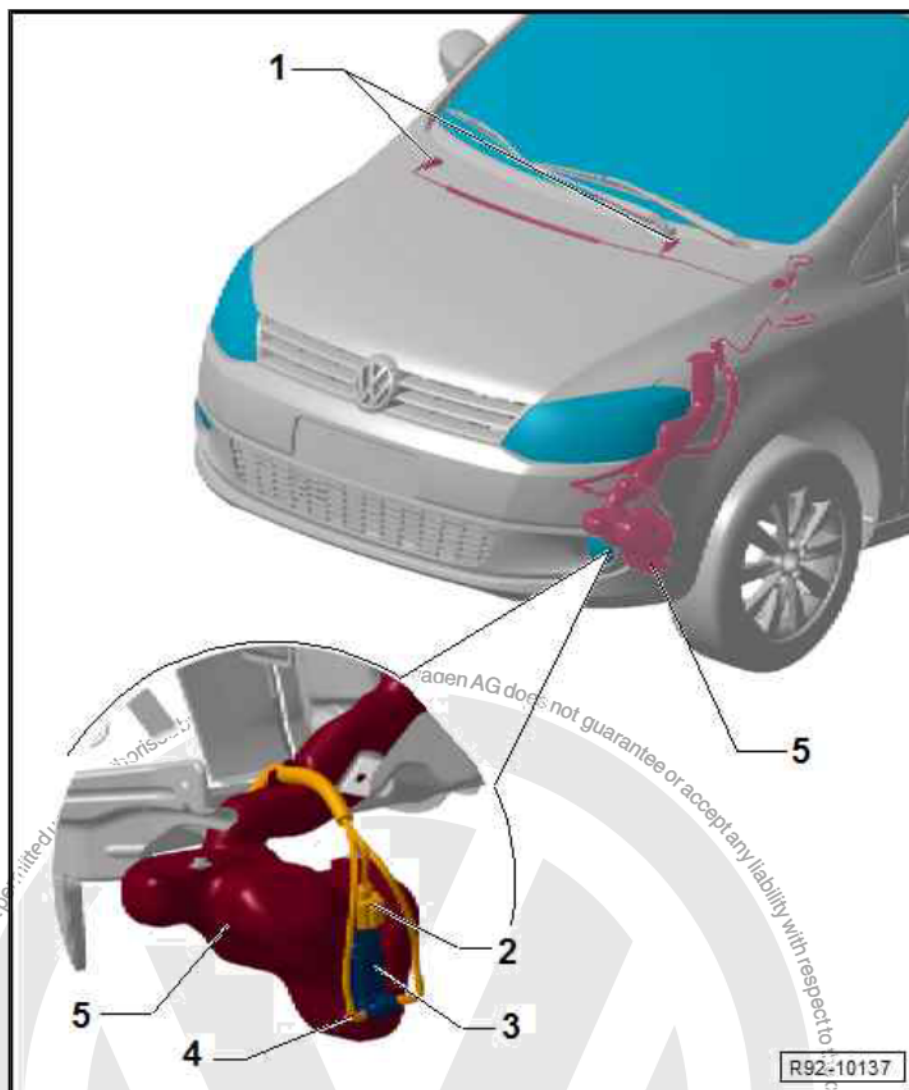
- ☐ Remove and install ➔ [page 77](#) .

#### 4 - Front washer pipe

- ☐ Connections ➔ General information; Rep. gr. 92 ; Windscreen, rear window and headlight washer and wiper .
- ☐ Repair ➔ General information; Rep. gr. 92 ; Windscreen, rear window and headlight washer and wiper .

#### 5 - Reservoir for the windscreen and rear window washer system

- ☐ Remove and install ➔ [page 76](#) .



## 2.2 Reservoir for the windscreen and rear window washer system - remove and install

### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Put the vehicle on a lift in order to make the operation easier.
- Remove the left and right front wheel housing protector ➔ Body; Rep. gr. 66 ; Front wheel housing protector, remove and install .
- Remove front bumper ➔ General body repairs, exterior; Rep. gr. 63 ; Bumpers .
- Disengage the Windscreen washer pump - V5- and/or Rear window washer pump - V13- connectors ➔ [page 77](#) .
- Drain the reservoir liquid.



- Remove the fastening nuts -arrows- from reservoir.
- Remove the reservoir from the bottom of vehicle.

Installation:

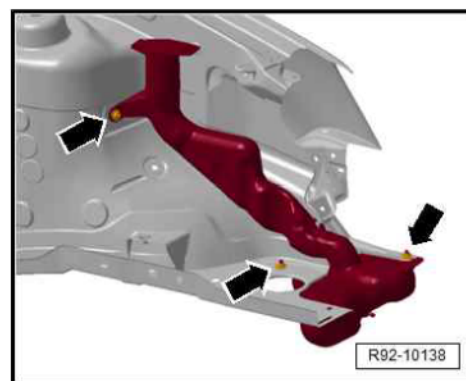
Installation is performed in reverse sequence to that of removal, observing the following:

- Tighten the fastening nuts to a (5-Nm) torque.



Note

*When replenishing the reservoir. If fluid is used, refer to the mixture ratio in ⇒ Maintenance ; Booklet 22.1 .*



## 2.3 Windscreen washer pump -V5- and/or Rear window washer pump -V13- - remove and install

Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ⇒ [page 2](#)



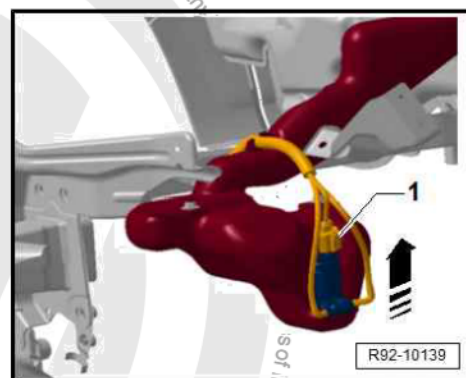
Note

*Wheel removal is not required.*

- Partially loosen the left front wheel arch cover ⇒ General body repairs, exterior; Rep. gr. 66 ; Exterior equipment .
- Spin the wheel entirely to the left.
- Disconnect the connector -1- and hose connections in the pump.
- Remove the pump from the reservoir, moving it towards -arrow-.

Installation:

Installation is performed in reverse sequence to the removal.

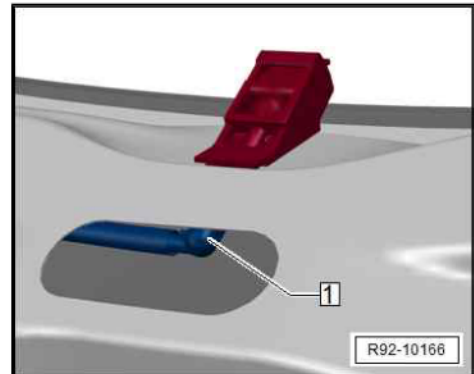




## 2.4 Windscreen washer system spray nozzles - replace

Removal:

- Remove the hose -1- from the washer jet.



- Press the spray nozzle towards -arrow- and remove it downwards.

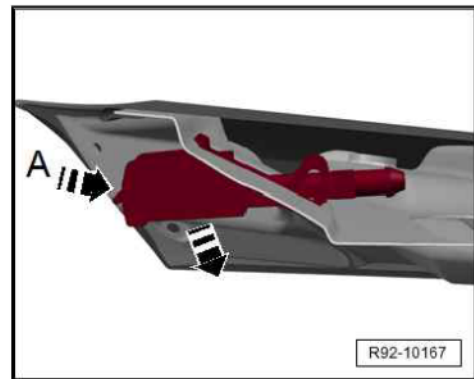
Installation:

Installation is performed in reverse sequence to the removal.



Note

After installing, use the adjustment procedures for the washer jets  
⇒ [page 78](#).



## 2.5 Windscreen washer system spray nozzles - adjust

### 2.5.1 Pre-adjusted spray nozzles (fan-type nozzles)



Note

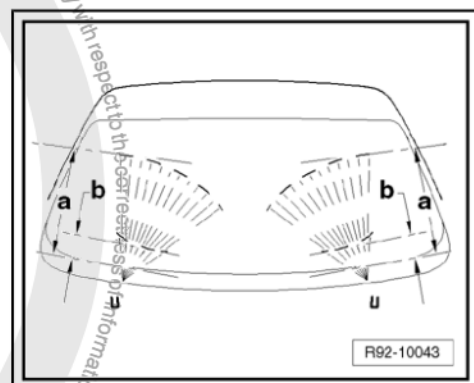
- ♦ The spray nozzles are pre-adjusted, but small differences in height can be adjusted.
- ♦ If the spray jet is irregular or cannot be adjusted to the centre of the washer area, the nozzle must be replaced (repair measure) ⇒ [page 78](#).
- ♦ Under no circumstances should needles or similar objects be used, since this might damage the nozzle's water passage.
- ♦ The washer jets cannot be cleaned in the opposite direction of the jet (e.g. blowing from the front).

Nozzle jet position:

a - 480 mm

b - 165 mm

If the two action surfaces of the nozzle jet are not according to the dimensions -a- and -b-, the jet height must be adjusted as explained below:



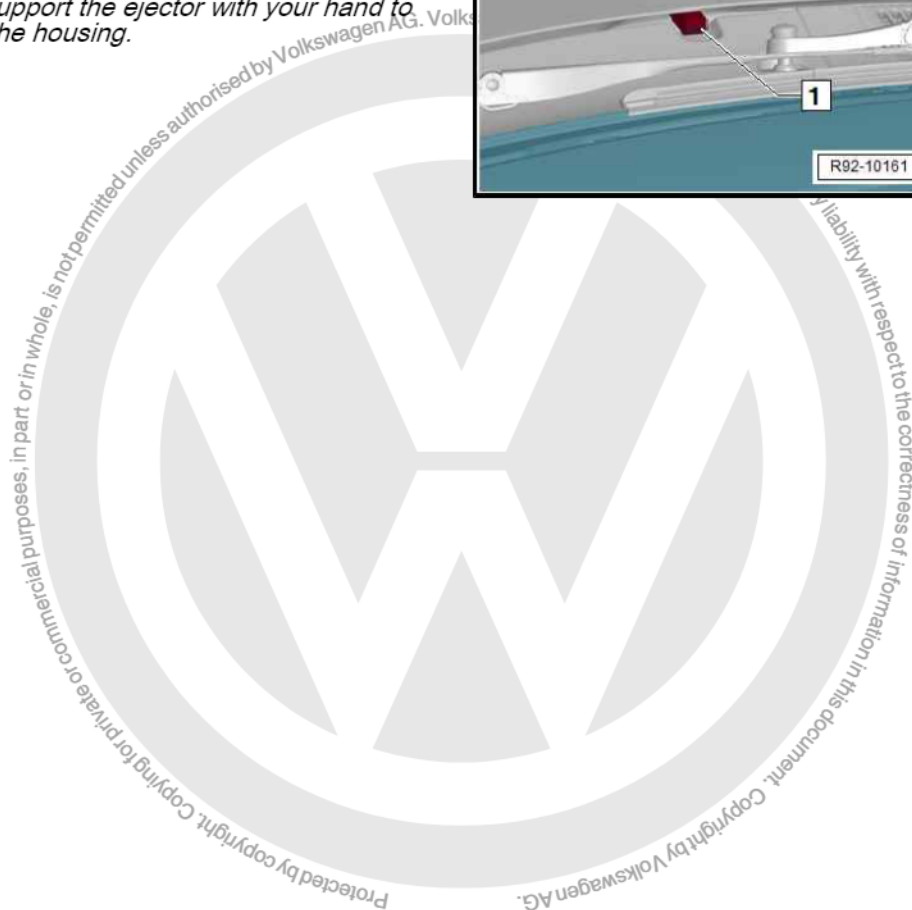
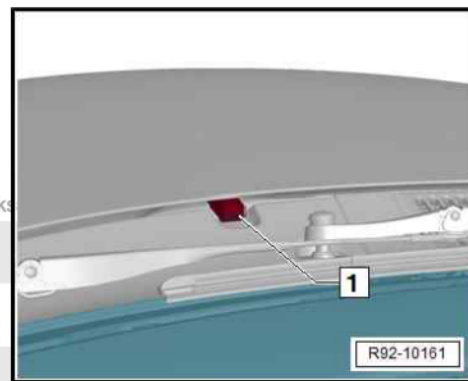


- Adjust the jet by the nozzle tab-1- moving it slightly upward or downward with your hand, with the front bonnet closed.



Note

*To perform the adjustment, support the ejector with your hand to prevent it from moving from the housing.*







### 3 Rear window wiper system



#### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ page 1 .*

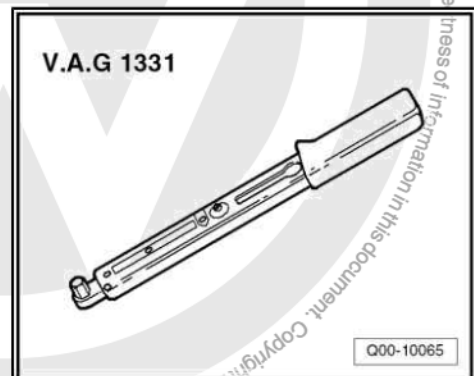


#### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

#### Special tools and workshop equipment required

- ◆ Torque wrench - 5 to 50 Nm (fit. 1/2") - VAG 1331-

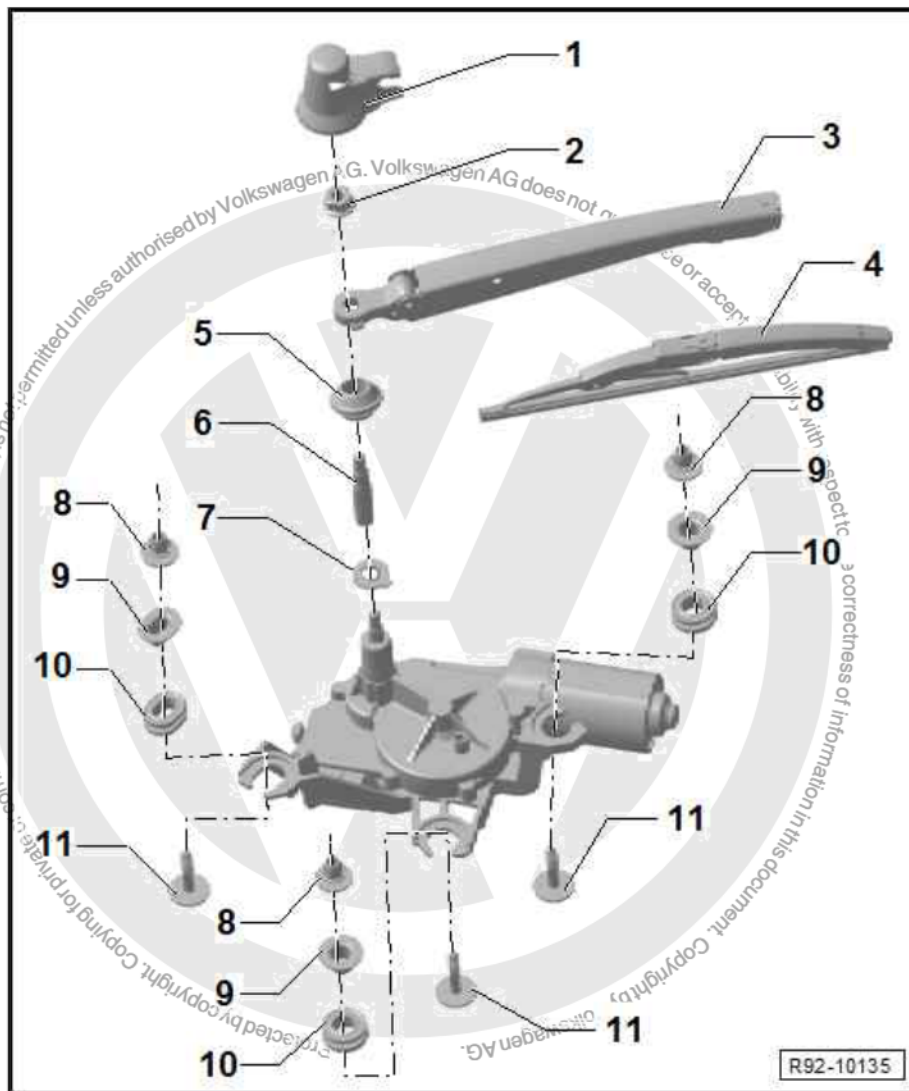


#### 3.1 Rear window wiper and washer system - assembly overview





- 1 - Protection cap
- 2 - Hexagonal nut
  - ☐ 12 ± 1.2 Nm.
- 3 - Rear window wiper arm
  - ☐ Remove and install
  - ☐ Adjust ⇒ [page 83](#) .
- 4 - Wiper blade
  - ☐ Remove and install
  - ⇒ [page 83](#) .
- 5 - Sealing eyelet
  - ☐ Replace if damaged.
- 6 - Spray nozzle
  - ☐ Replace ⇒ [page 86](#) .
  - ☐ Adjust ⇒ [page 87](#) .
- 7 - Seal
  - ☐ Replace if damaged.
- 8 - Spacer
  - ☐ Replace if damaged.
- 9 - Rubber washer
- 10 - Mounting (bushing) for the mechanism support
- 11 - Bolt
  - ☐ 8 ± 0.8 Nm.



### 3.2 Rear window wiper arm - remove and install

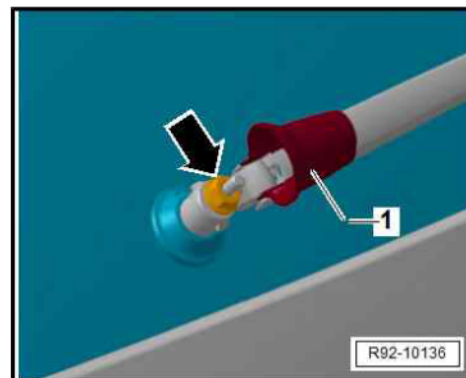
#### Removal:

- Raise the protective cover -1- of the rear window wiper.
- Loosen fastening nut -arrow- but do not remove it completely.
- Tilt the wiper arm and release it by means of sideways movements in the cone.
- Remove the fastening nut and remove the rear window wiper arm.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- To place the wiper motor in the end-of-course position, turn the rear window wiper switch on / off with the ignition on.
- Fit the rear window wiper arm on the resting position
- ⇒ [page 83](#) .
- Tighten the fastening nut -arrow- to (12-Nm) torque.

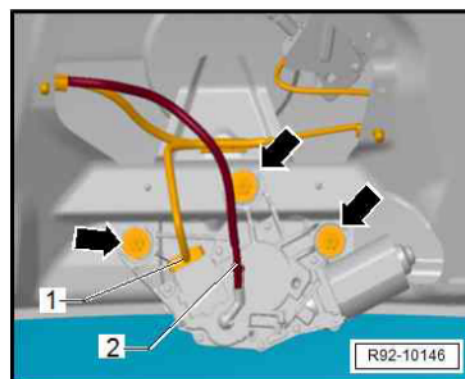




### 3.3 Rear window wiper motor -V12- - remove and install

#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➤ [page 1](#) .
- Remove rear window wiper arm ➤ [page 81](#) .
- Remove the rear door lining ➤ General body repairs, interior; Rep. gr. 70 ; Lining / insulation .
- Disengage the connector -1- from the Rear window wiper motor - V12- .
- Release the hose -2- from the spray nozzle.
- Remove fastening screws -arrows- and remove the Rear window wiper motor - V12- .



Upon removal, observe the sealing eyelet -arrow- to keep it correctly fitted on the rear window.

#### Installation:

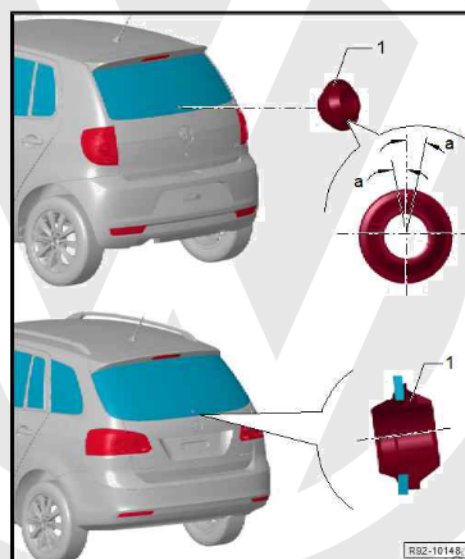
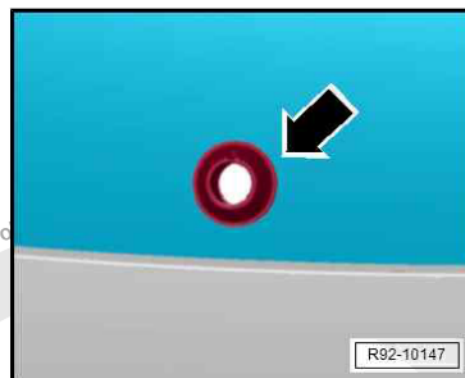
Installation is performed in reverse sequence to that of removal, observing the following:



#### WARNING

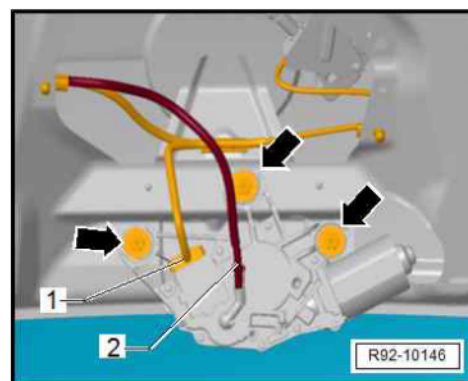
*Observe the correct assembly position for the sealing eyelet, in order to prevent water from infiltrating into the vehicle.*

- Install sealing eyelet -1- on rear window so to adjust measure -a- to  $\pm 10^\circ$  .





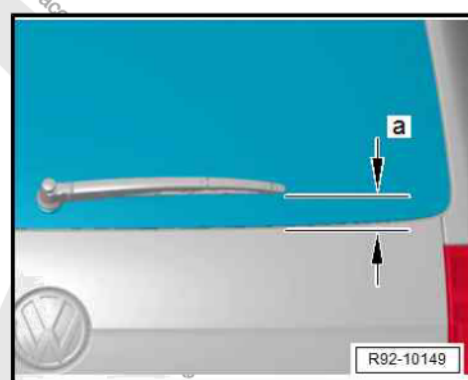
- Tighten fastening screws -arrows- to  $(8 \pm 0,8 \text{ Nm})$ .



### 3.4 Rear window wiper blade resting position - adjust

Fox/Crossfox:

The distance -a- between the rear window wiper blade rubber and the lower edge of the window must be of  $41 \pm 5 \text{ mm}$ .

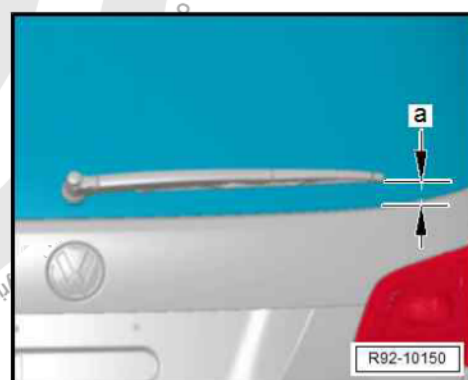


Spacefox 7 Suran:

The distance -a- between the rear window wiper blade rubber and the lower edge of the window must be of  $35 \pm 5 \text{ mm}$ .

For all vehicles:

- If necessary, adjust the resting position by moving the rear window wiper arm ➔ [page 81](#) .



### 3.5 Rear window wiper blade - remove and install

Removal:

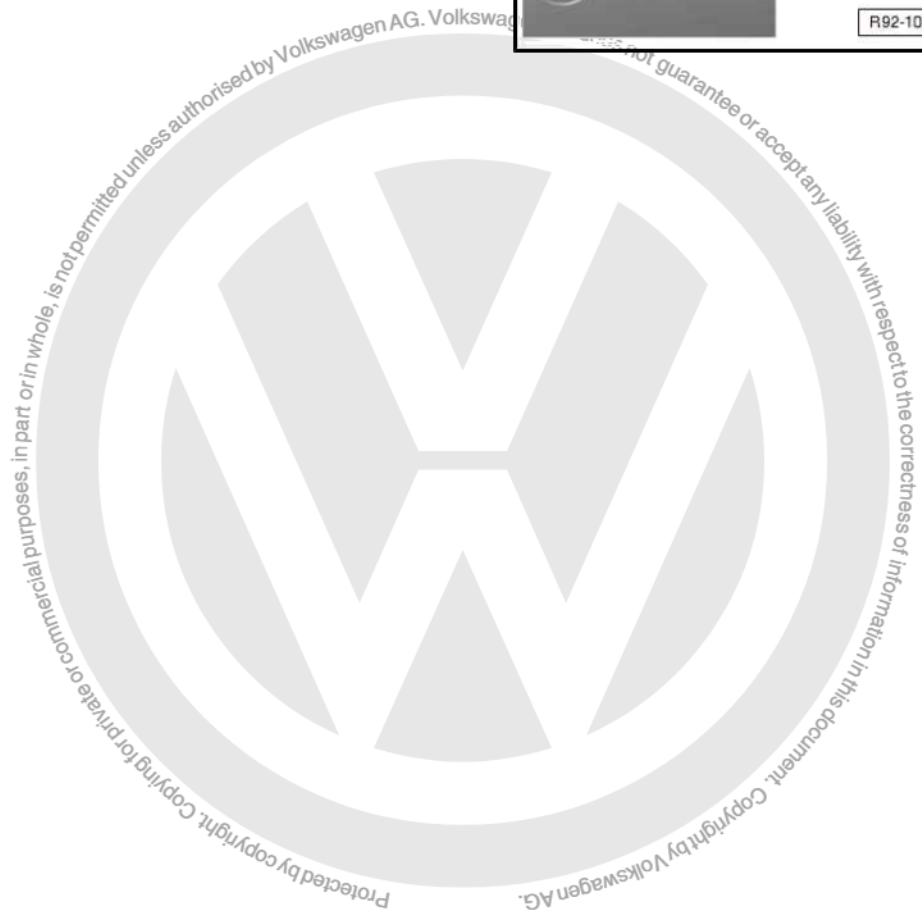
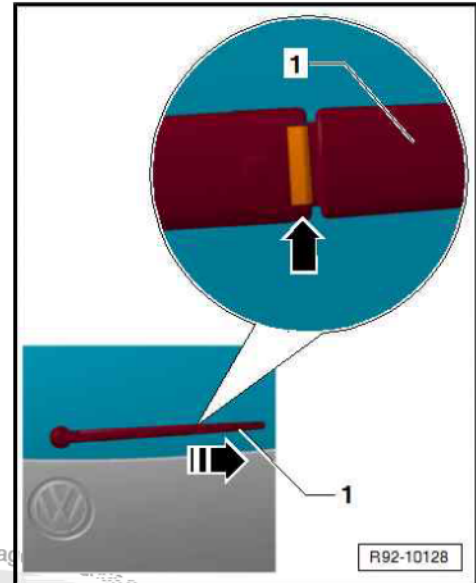
- Raise the rear window wiper arm.



- Press the lock -arrow- and pull the blade -1- in the direction -arrow-, and remove it.

Installation:

Installation is performed in reverse sequence to the removal.





## 4 Rear window washer system



### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ page 1 .*



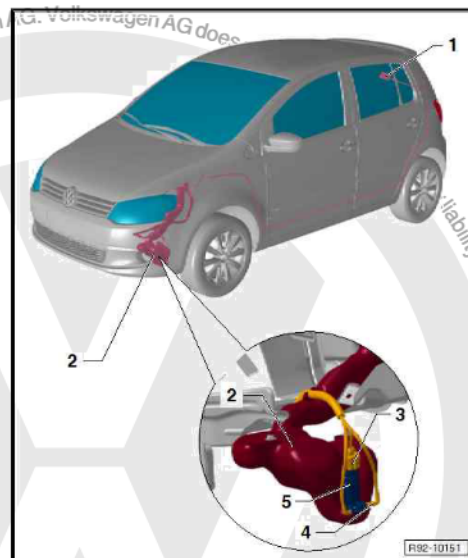
### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

### 4.1 Rear window washer system - assembly overview

Fox/Crossfox:

Spacefox / Suran:







1 - Spray nozzle

- ☐ Replace ➔ [page 86](#) .
- ☐ Adjust ➔ [page 87](#) .

2 - Reservoir for the windscreen and rear window washer system

- ☐ Remove and install ➔ [page 76](#) .

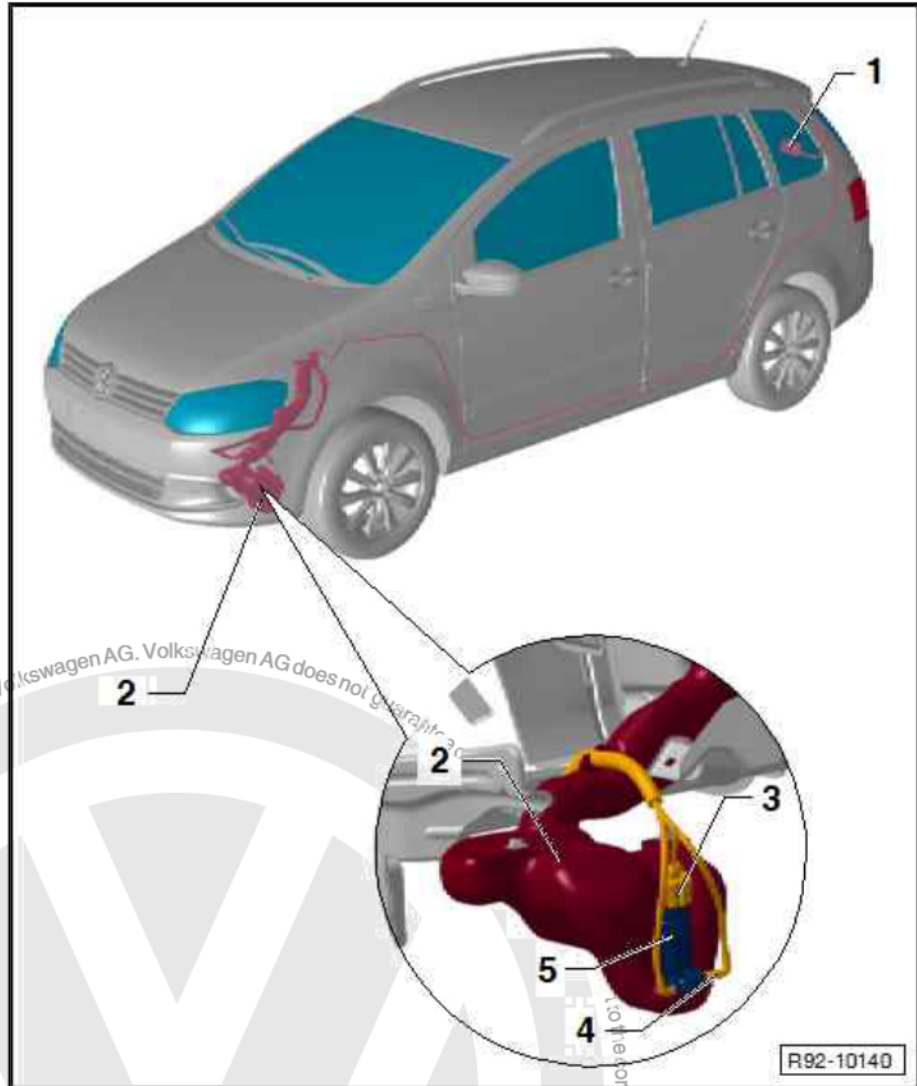
3 - Windscreen washer pump connector Rear window washer pump - V5- and/or Rear window washer pump - V13-

4 - Rear washer hose

- ☐ Connections ➔ General information; Rep. gr. 92 ; Windscreen, rear window and headlight washer and wiper .
- ☐ Repair ➔ General information; Rep. gr. 92 ; Windscreen, rear window and headlight washer and wiper

5 - Windscreen washer pump - V5- and/or Rear window washer pump - V13-

- ☐ Remove and install ➔ [page 77](#) .



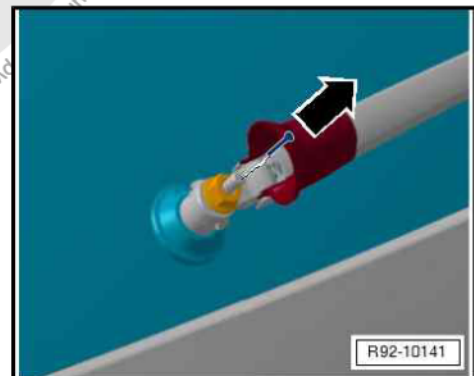
## 4.2 Rear window washer system spray nozzle - replace

### Removal:

- Place the rear window wiper on the resting position.
- Raise the protective cover of the rear window washer system.
- Carefully remove the spray nozzle towards the -arrow-with suitable pliers.

### Installation:

- Insert the washer jet up to the stop on the wiper shaft, so that the washer jet opening faces upwards.
- Lower the protection cover.



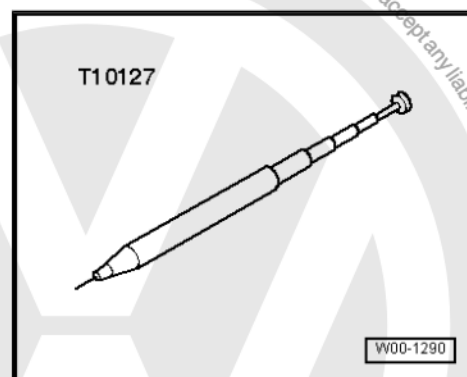




### 4.3 Rear window washer system spray nozzle - adjust

Special tools and workshop equipment required

- ◆ Adjusting device - T 10127-

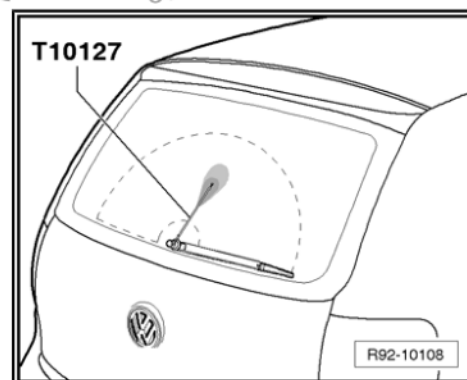


#### Note

- ◆ *If the washer jet is irregular or cannot be adjusted to the centre of the washer area, the washer jet must be replaced (repair measure) ⇒ [page 86](#).*
- ◆ *Under no circumstances should needles or similar objects be used, since this might damage the nozzle's water passage.*
- Adjust the spray nozzle so the jet is sprayed to the centre of the wiper action area.

The nozzle water jet must fall on the middle of the area to be cleaned.

- If necessary, adjust them with the Adjustment device - T 10127- , as indicated.





## 94 – Lights, bulbs, switches - exterior

### 1 Main headlights



#### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ [page 1](#).*



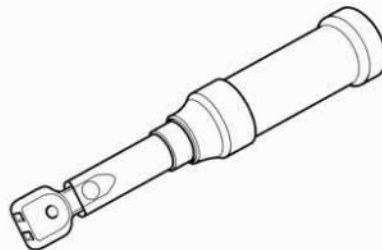
#### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A-.*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A-, earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

#### Special tools and workshop equipment required

- ◆ Torque wrench 2 to 10 Nm - VAG 1783-

V.A.G 1783



Q00-10085

### 1.1 Main headlights - assembly overview



1 - Main headlight (single)

- ☐ Remove and install  
⇒ [page 90](#)
- ☐ Check adjustment  
⇒ [page 101](#)

2 - Main headlight (twin)

- ☐ Remove and install  
⇒ [page 90](#)
- ☐ Check adjustment  
⇒ [page 101](#)

3 - Bushing

4 - Bolts

- ☐ 3 Nm

5 - Left high-beam headlight lamp - M30- and/or Right high-beam headlight lamp - M32-

- ☐ Halogen lamp H1, 12 V - 55 W.
- ☐ Replace ⇒ [page 94](#)

6 - Protection cap

7 - Left front sidelight lamp - M1- and/or Right front sidelight lamp - M3-

- ☐ Incandescent lamp 12 V - 5 W.
- ☐ Replace ⇒ [page 92](#)

8 - Position light socket

- ☐ (Twin Headlight).

9 - Left front indicator light lamp - M5- and/or Right front indicator light lamp - M7-

- ☐ Incandescent lamp PY21W - 12V.
- ☐ Replace ⇒ [page 94](#)

10 - Turn indicator lamp socket

11 - Left low-beam headlight lamp - M29- and/or Right low-beam headlight lamp - M31-

- ☐ Halogen lamp H7, 12 V - 55 W.
- ☐ Replace ⇒ [page 93](#)

12 - Bushing

13 - Left front indicator light lamp - M5- and/or Right front indicator light lamp - M7-

- ☐ Incandescent lamp PY21W - 12V.
- ☐ Replace ⇒ [page 92](#)

14 - Turn indicator lamp socket

15 - Left front sidelight lamp - M1- and/or Right front sidelight lamp - M3-

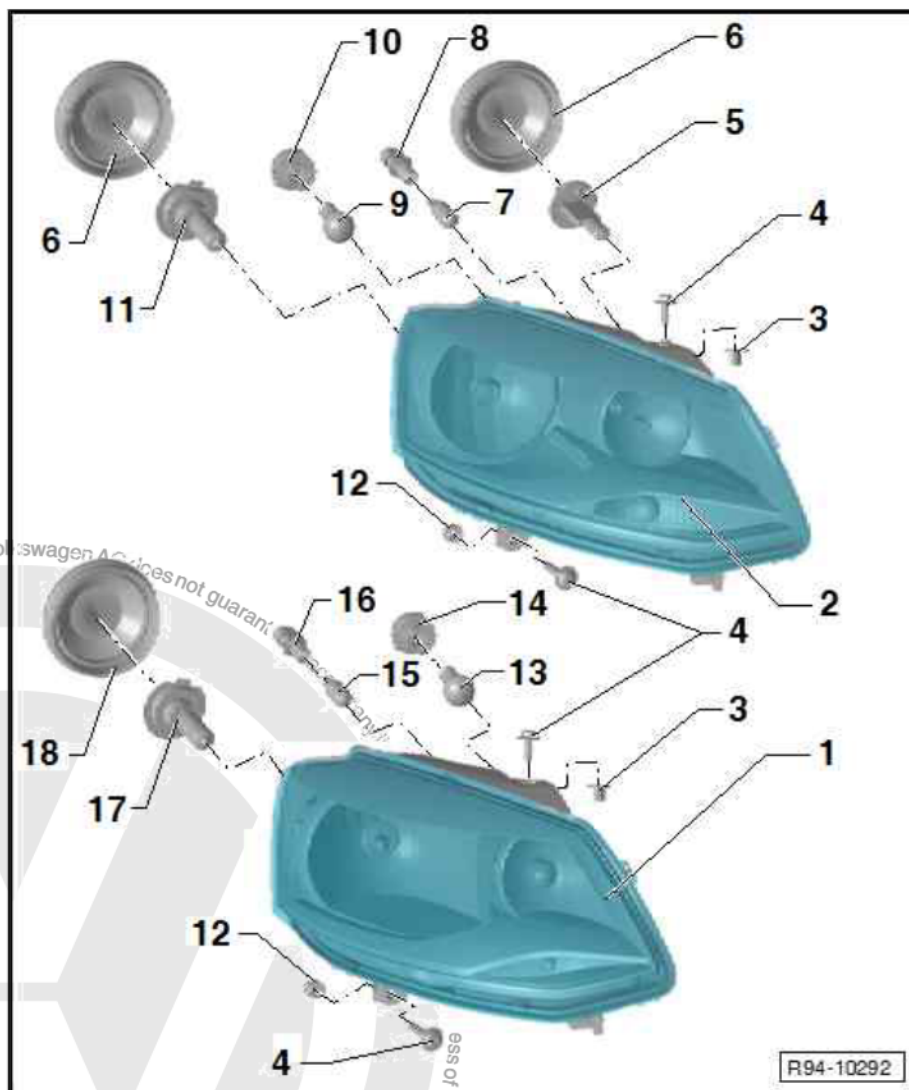
- ☐ Incandescent lamp 12 V - 5 W.
- ☐ Replace ⇒ [page 90](#)

16 - Position light socket

- ☐ (Single Headlight).

17 - Left low beam light - M29- and Left high beam light - M30- and/or Right low beam light - M31- and Left high beam light - M32-

- ☐ Halogen lamp H4, 55/60 W - 12V.



R94-10292



❑ Replace ➔ [page 91](#)

## 18 - Protection cap

### 1.2 Main Headlights - remove and install



#### Note

*Removal and installation of the main headlights are identical on both sides; the procedure below refers only to one of the headlights.*

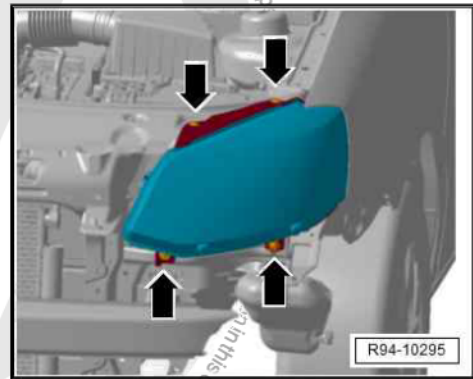
#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Remove the front bumper ➔ General body repairs, exterior; Rep. gr. 63 ; Bumpers .
- Remove the securing bolts -arrows-.
- Carefully pull the headlight forwards, disconnect the multiple connector and remove the headlight from its housing.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Tighten the securing bolts -arrows- to the torque of (3 Nm).
- After installation, check main headlight functioning.
- Check and adjust the main headlights if necessary  
➔ [page 101](#) .



### 1.3 Main headlight lamps (single) - replace



#### Note

- ♦ *Never touch the glass bulb when installing a lamp. The fingers leave traces of fat on the glass envelope, which evaporate when the lamp is turned on, causing the glass to cloud over.*
- ♦ *Replacement of the main headlight lamps is identical on both sides; the procedure below refers only to one of the headlights.*

#### 1.3.1 Front side light -M1- and/or -M3- - replace

#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Disconnect socket connector.



- Remove the socket with lamp by turning it towards the -arrow-.
- Remove the lamp.
- Install a new lamp in the socket.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- After installation, check the light functioning.



### 1.3.2 -M29- Low-beam headlight lamp -M31- and/or -M30- High-beam headlight lamp -M32- - replace

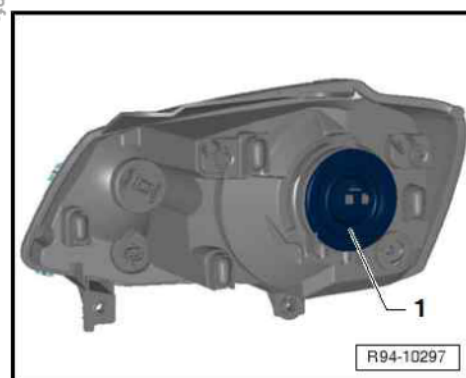


#### Note

To replace the Left dipped beam bulb - M29- and the Left main beam bulb - M30- , the Battery - A- ➔ [page 6](#) needs to be removed.

#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Disconnect the lamp connector.
- Remove the protective cap -1-.

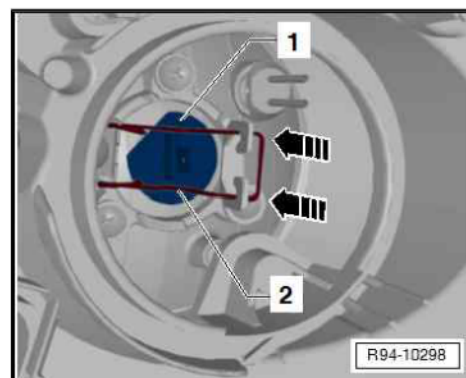


- Loosen the circlip -2- by pressing it according to -arrow- and carefully remove the lamp -1- from the reflector.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- After installation, check the new lamp functioning.
- Check and carry out the headlight adjustment, if necessary ➔ [page 101](#) .







### 1.3.3 Front turn signal bulb -M5- and/or -M7- - replace

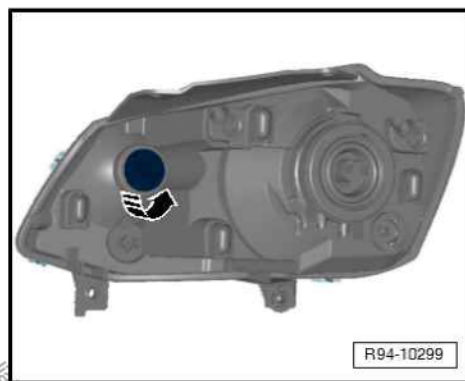
#### Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➤ [page 1](#) .
- Disconnect the socket connector.
- Remove the socket with lamp by turning it towards -arrow-.
- Remove the lamp from the socket.
- Install a new lamp in the socket.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- After installation, check the light functioning.



### 1.4 Main headlight lamps (twin) - replace



#### Note

- ◆ *Never touch the glass bulb when installing a lamp. The fingers leave traces of fat on the glass envelope, which evaporate when the lamp is turned on, causing the glass to cloud over.*
- ◆ *Replacement of the main headlight lamps is identical on both sides; the procedure below refers only to one of the headlights.*

#### 1.4.1 Front side light -M1- and/or -M3- - replace



#### Note

To replace the left front side marker light bulb - M1- , the Battery - A- ➤ [page 6](#) needs to be removed.

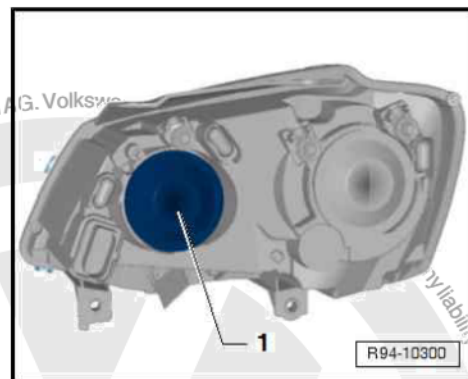
#### Removal:

- Turn off the ignition and all electrical devices, then remove the ignition key.
- Disconnect the Battery - A- ➤ [page 1](#) .





- Remove the protective cover -1-.

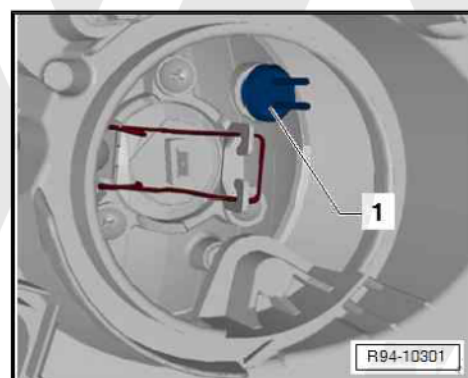


- Carefully remove socket with lamp -1- from reflector.
- Remove the lamp.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

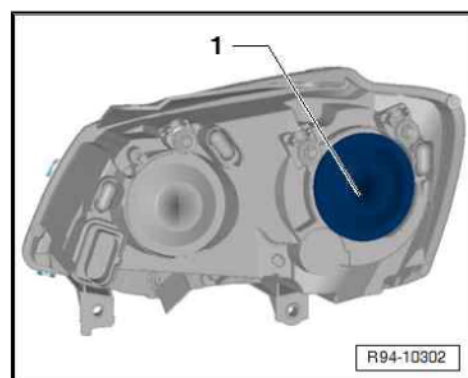
- After installation, check the light functioning.
- Check and carry out the headlight adjustment, if necessary  
⇒ [page 101](#) .



### 1.4.2 Low-beam lamp -M29- and/or -M31- - replace

#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ⇒ [page 1](#) .
- Remove the protective cover -1-.

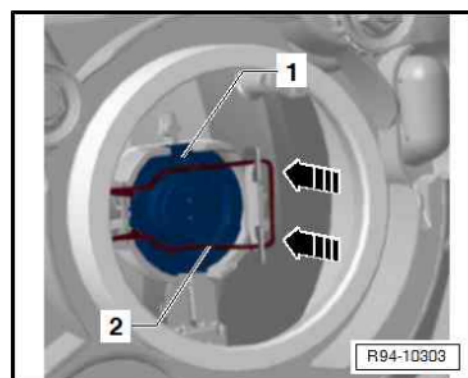


- Disconnect the connector from the lamp-1-.
- Release the lock-2- by pressing according to -arrows- and carefully remove the lamp -2-.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- After installation, check the light functioning.
- Check and carry out the headlight adjustment, if necessary  
⇒ [page 101](#) .





### 1.4.3 High beam lamp -M30- and/or -M32- -replace

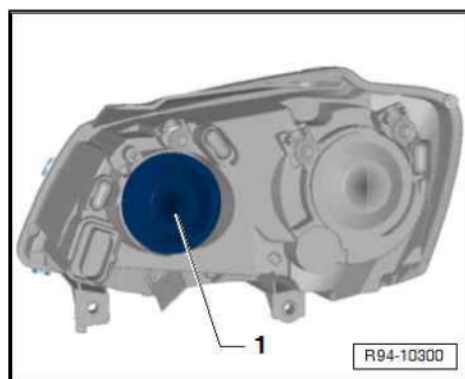


#### Note

To replace the left main beam bulb - M30- ,the Battery - A-  
⇒ [page 6](#) needs to be removed.

#### Removal:

- Turn off the ignition and all electrical devices, then remove the ignition key.
- Disconnect the Battery - A- ⇒ [page 1](#) .
- Remove the protective cover -1-.

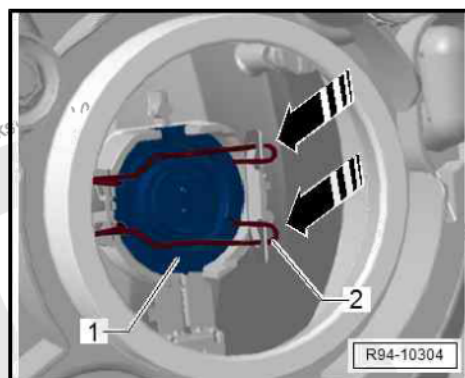


- Disconnect the connector from the lamp-1-.
- Disengage the locking ring -2- by pressing it according to -arrows- and carefully remove the lamp -1-.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- After installation, check the light functioning.
- Check and carry out the headlight adjustment, if necessary  
⇒ [page 101](#) .



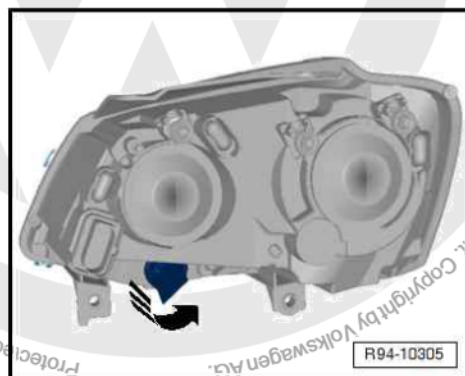
### 1.4.4 Front turn signal bulb -M5- and/or -M7- -replace

- Turn off the ignition and all electrical devices, then remove the ignition key.
- Disconnect the Battery - A- ⇒ [page 1](#) .
- Remove the socket with lamp by turning it towards the -arrow-.
- Remove the lamp from the socket.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- After installation, check the light functioning.





## 2 Fog lights



### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ page 1.*



### Note

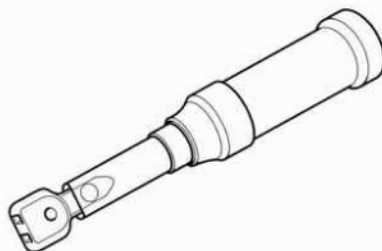
- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A-.*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A-, earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

### Special tools and workshop equipment required

- ◆ Torque wrench 2 to 10 Nm - VAG 1783-

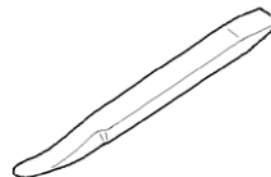
- ◆ Spatula - VW 037-

**V.A.G 1783**



Q00-10085

**VW 037**

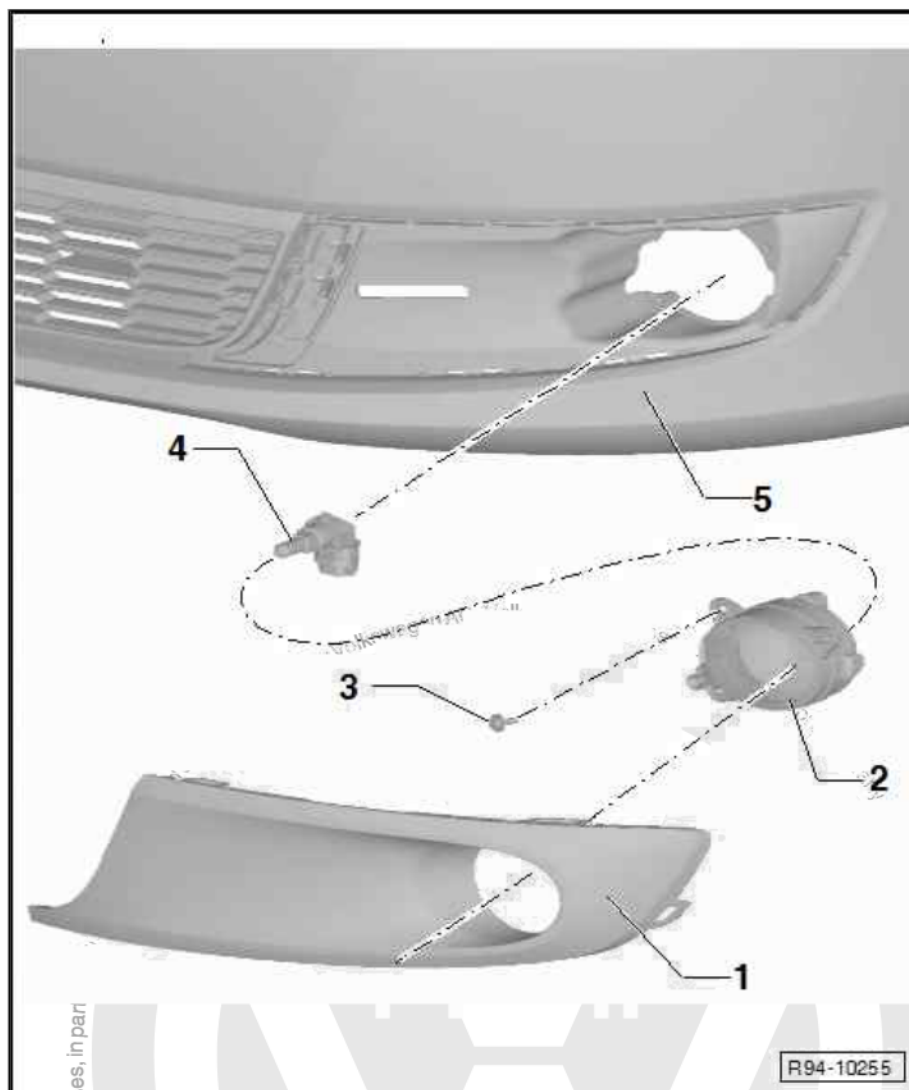


Q00-0014

### 2.1 Fog lights - assembly overview



- 1 - Cover
- 2 - Fog lights
  - ☐ Remove and install  
⇒ [page 96](#)
  - ☐ Check adjustment  
⇒ [page 103](#)
- 3 - securing bolt
  - ☐ 3 units
  - ☐ 1.5 Nm
- 4 - Left fog light lamp - L22-  
and/or Right fog light lamp -  
L23-
  - ☐ Halogen lamp HB4 (12V  
- 51W)
  - ☐ Replace ⇒ [page 97](#)
- 5 - Front bumper



## 2.2 Fog lights - remove and install



### Note

*Removal and installation of fog lights are identical on both sides;  
the procedure below refers only to one of the sides.*

#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ⇒ [page 1](#) .
- Remove the side grille from the front protector ⇒ General body repairs, exterior; Rep. gr. 66 ; Exterior equipment .

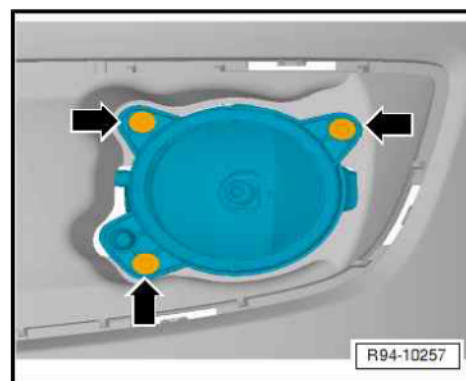


- Loosen the fastening screws -arrows- on the fog light.
- Remove the fog light from the bumper cover by pulling them forward, following the cable length.
- Disconnect the fog light connector and remove the fog light.

Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Tighten the securing bolts -arrows- to the torque of (1.5 Nm).
- After installation, check the fog light functioning.
- Check and carry out the fog light adjustment ➔ [page 101](#)



## 2.2.1 Fog light lamp -L22- and/or -L23- - replace



Note

- ◆ The removal and installation of fog light lamps are identical on both sides; the procedure below refers only to one of the fog lights.
- ◆ Never touch the glass bulb when installing a new lamp. The fingers leave traces of fat on the glass envelope, which evaporate when the lamp is turned on, causing the glass to cloud over.

Removal:

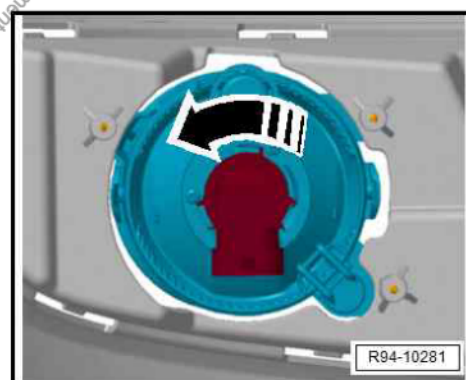
- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Disconnect its respective connector.
- Turn the socket along with the fog light lamp towards the- arrow- and remove the fog light lamp.

The fog light lamp is fastened to the lamp shell, and cannot be replaced individually.

Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- After installation, check the fog light functioning.
- Check and carry out the fog light adjustment ➔ [page 101](#) .

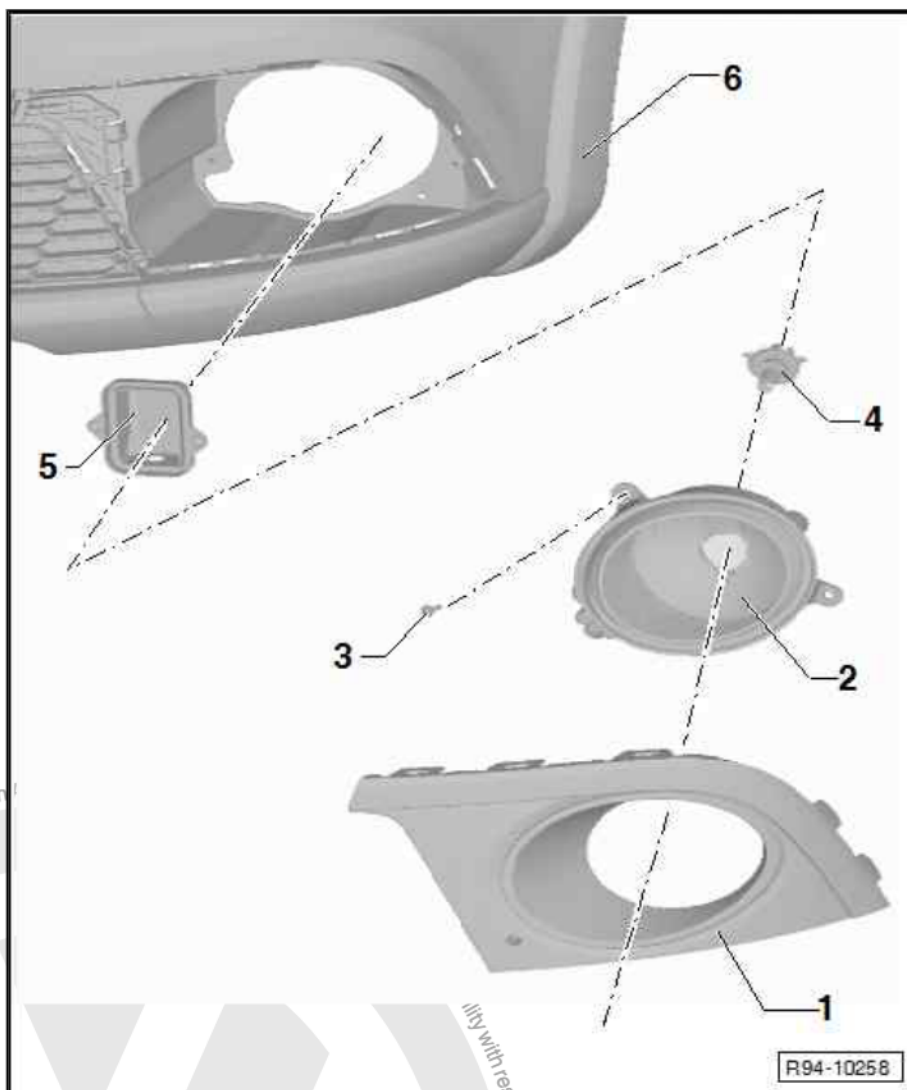


## 2.3 Auxiliary headlights (CrossFox / Space Cross / Suran Cross) - assembly overview





- 1 - Cover
- 2 - Ancillary headlight
- 3 - securing bolt
  - 3 units
  - 1.5 Nm
- 4 - Lamp
- 5 - Protection cap
- 6 - Front bumper



## 2.4 Auxiliary headlights (CrossFox / Space Cross / Suran Cross) - remove and install



### Note

*Removing and installing auxiliary headlights is identical on both sides; the procedure below refers only to one of the sides.*

### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➤ [page 1](#) .
- Remove the side grille from the front protector ➤ General body repairs, exterior; Rep. gr. 66 ; Exterior equipment .



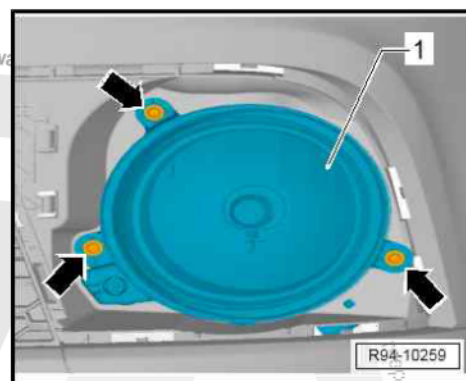


- Loosen fastening screws -arrows- from auxiliary headlight -1-.
- Remove the auxiliary headlight from the bumper cover by pulling them forward, following the cable length.
- Loosen and disconnect the connector.
- Remove the auxiliary headlight.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Tighten the securing bolts -arrows- to the torque of (1.5 Nm).
- After installation, check the auxiliary headlight functioning -1-.
- Check and carry out the auxiliary headlight adjustment  
⇒ [page 101](#) .



### 2.4.1 Auxiliary headlight lamps (CrossFox / Space Cross / Suran Cross) - replace

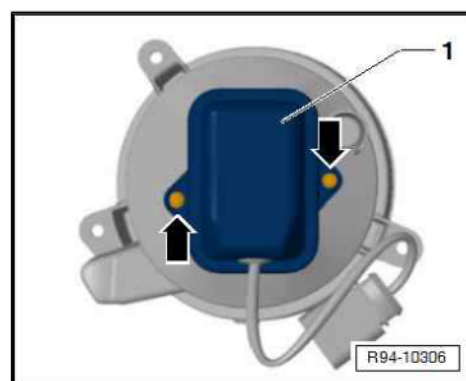


#### Note

- ◆ Removal and installation of auxiliary headlight lamps is identical on both sides; the procedure below refers only to one of the lights.
- ◆ Never touch the glass bulb when installing a new lamp. The fingers leave traces of fat on the glass envelope, which evaporate when the lamp is turned on, causing the glass to cloud over.

#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ⇒ [page 1](#) .
- Remove the auxiliary headlight ⇒ [page 98](#) .
- Remove fastening bolts -arrows- and protection cover -1-.
- Disconnect the lamp connector.



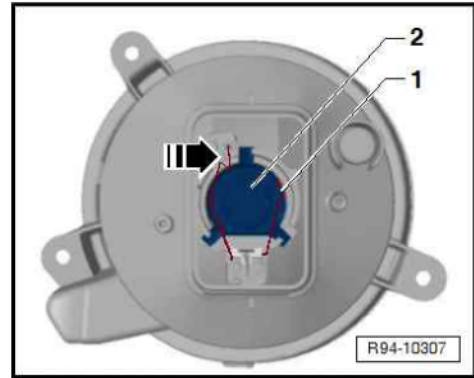


- Loosen the circlip -1- by pressing it according to -arrow- and carefully remove the lamp -2- from the reflector.

**Installation:**

Installation is performed in reverse sequence to that of removal, observing the following:

- After installation, check the auxiliary headlight functioning.
- Check and carry out the auxiliary headlight adjustment  
⇒ [page 101](#) .

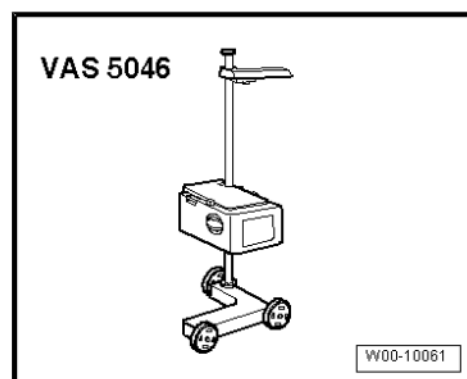




### 3 Headlights - check adjustment

Special tools and workshop equipment required

- ◆ Headlight aligner - VAS 5046- or Headlight adjustment device - VAS 5047-



In principle, the following checking and adjustment description is valid for all countries. However, the guidelines and standards of the respective country must be taken into account.

Prerequisites for checking and adjustment:

- Tire inflation pressure OK.
- The headlight lenses must never be damaged or dirty.
- Reflectors and lamps OK.
- The vehicle's load condition must be known.

Load: With one person or 75 kg on the driver's seat of empty vehicles (empty weight).

The weight of an empty vehicle is the weight of the vehicle ready for operation and with a full fuel tank (at least 90%), including the weight of every component required for its use (e.g.: spare wheel, tools, towing hook, fire extinguisher, etc.).

If the fuel reservoir is not at least 90% full, you must simulate the load as follows:

- Check the tank level on the fuel gauge. Establish the required additional weight according to the table below and stow this weight in the luggage compartment.

Filling quantities table

Filling level on tank indicator	Additional weight in kg
1/4	30
1/2	20
3/4	10
full	0

Example

When the fuel tank is half full, you must place an additional weight of 20 kg in the luggage compartment.



Note

*As additional weight, it is preferable to use fuel containers filled with water (one fuel container with a 5-liter capacity corresponds to a weight of approximately 5 kg).*



The vehicle should be moved for a few meters and pushed down a couple of times both at the front and at the rear so the shock absorbers get properly settled.

- ◆ The vehicle and the headlight adjustment device must be on the same level⇒ Instruction manual from the headlight adjustment device .
- ◆ The vehicle and the headlight adjustment device must be on a flat surface.
- ◆ The Tilt must be adjusted.

The housing above the headlight has the tilt values engraved in "%". The headlights must be adjusted according to this data. The percentage is related to a projection distance of 10 meters. A 1.0% tilting value, for example, corresponds to 10 cm.

The button for adjusting the headlight reach must be in the basic position (-).

### 3.1 Check headlight adjustment (with the new inspection display without 15° adjustment line).

#### 3.1.1 Main headlights

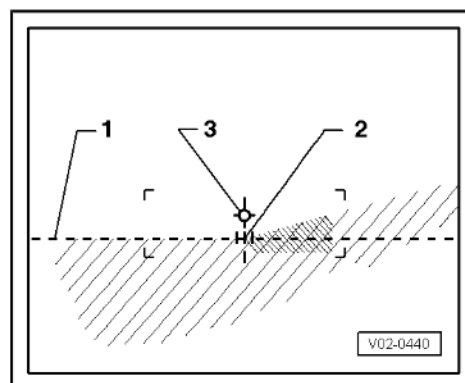
Check the following:

- With the low beam on, check if the horizontal light-dark limit touches the separation limit -1- of the test surface.
- Check if the point of inflexion -2- between the left horizontal section and the right ascending section of the light-dark limit runs vertically through the central mark -3-. In this case, the light core of the light beam is at the right of the vertical line.



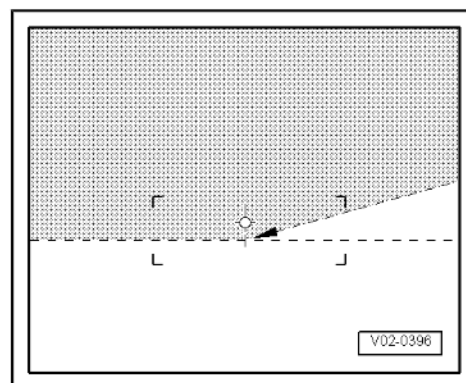
#### Note

- ◆ Line -1- is the measurement from the ground to the centre of the headlight minus 120 mm for a distance of 10 m.
- ◆ Line -1- is the measurement from the ground to the centre of the headlight minus 60 mm for a distance of 5 m.
- ◆ For an easier determination of the breaking point -2-, cover and then release the left half of the headlight (seen from the driver's side). Then, test the low beam once more.
- ◆ After correctly adjusting the low beam, the high beam is automatically adjusted, this means that the high beam centre must be on the headlight central mark-3-. A 200-mm deviation to the right or to the left, 150 mm upwards and 100 mm downwards is acceptable.





- For the current checking viewer with an adjustment line of  $15^\circ$ , the same adjustment as for new checking viewer applies. To avoid incorrect adjustments, the  $15^\circ$  line will no longer be considered.



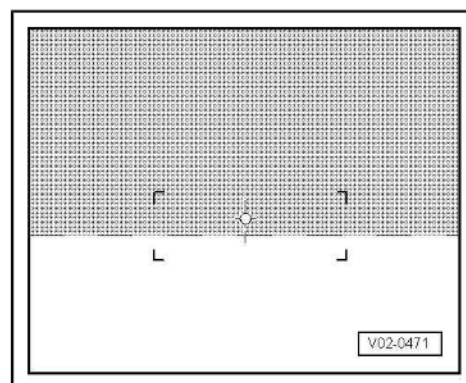
### 3.1.2 Fog lights

- Check if the light-dark limit reaches the adjustment line and runs vertically over the entire measuring device line.



Note

- The light-dark separation mark is the measurement from the ground to the centre of the headlight, minus 200 mm for a distance of 10 m.
- The light-dark separation mark is the measurement from the ground to the centre of the headlight, minus 100 mm for a distance of 5 m.



### 3.1.3 Additional headlights

- Additional headlights in other systems, installed later, must be installed according to their specific instructions.

## 3.2 Headlights - adjust

### 3.2.1 Main headlights - adjust



Note

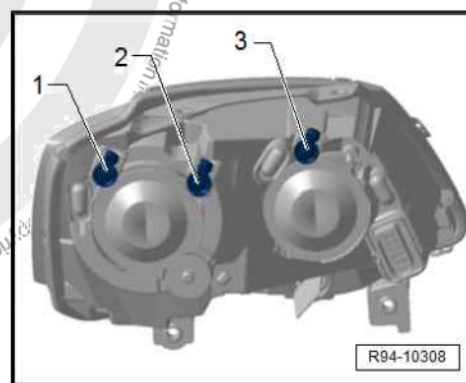
Adjustment of main headlights is identical on both sides; adjustment screws are symmetrically placed and the procedure below refers only to one of the headlights.

Twin headlight:

In order to adjust the height light/dark limit for the high beam headlight, turn the adjustment screw -3-.

In order to adjust the height light/dark limit for the low beam headlight, turn the adjustment screw -2-.

In order to adjust the side light/dark limit for the low beam headlight, turn the adjustment screw -1-.





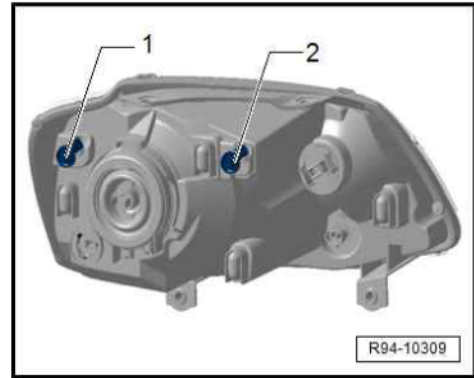
#### Single headlight:

- In order to adjust the height light/dark limit for the main headlight, turn the adjustment screw -2-.
- In order to adjust the side light/dark limit for the main headlight, turn the adjustment screw -1-.



#### Note

*Please check also if both headlights move symmetrically when positioning the light range.*



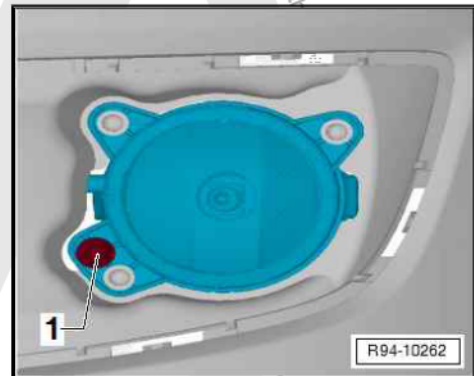
### 3.2.2 Fog lights - adjust



#### Note

*Adjustment of fog lights is identical on both sides; adjustment bolts are symmetrically placed, and the procedure below refers only to one of the headlights.*

- In order to adjust fog light reach, turn the adjustment bolt -1-.



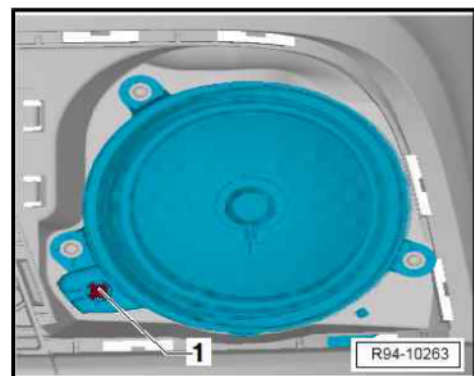
### 3.2.3 Fog lights (Cross Fox / Space Cross / Suran Cross) - adjust (version 1)



#### Note

*Adjustment of fog lights is identical on both sides; adjustment bolts are symmetrically placed, and the procedure below refers only to one of the headlights.*

- Remove the side grille from the front protector ⇒ General body repairs, exterior; Rep. gr. 66 ; Exterior equipment .
- In order to adjust fog light reach, turn the adjustment bolt -1-.







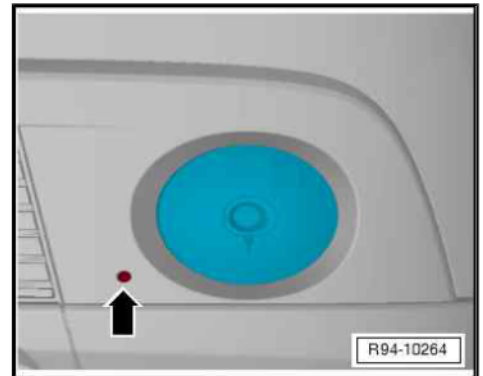
### 3.2.4 Fog lights (Cross Fox / Space Cross / Suran Cross) - adjust (version 2)



#### Note

*Adjustment of fog lights is identical on both sides; adjustment bolts are symmetrically placed, and the procedure below refers only to one of the headlights.*

- To adjust the fog light reach, insert a screwdriver into the specified hole -arrow- and turn the adjustment screw.





## 4 Side indicator lights

### 4.1 Side indicator lights incorporated to external rear-view mirrors

Remove turn signal indicator embedded in the external rear-view mirror ⇒ General body repairs, exterior; Rep. gr. 66 ; External equipment .



## 5 Tail lights



### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ [page 1](#) .*



### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

### 5.1 Tail lights (Fox/Crossfox) - assembly overview



### Note

*Disassemble the bulb support in order to replace the bulbs ➔ [page 109](#) .*





#### 1 - Tail light

- ☐ Remove and install  
⇒ [page 108](#)

#### 2 - Left brake light lamp - M9- and/or Right brake light lamp. - M10-

- ☐ P21/5W - 12V.

#### 3 - Gasket

#### 4 - Left rear turn indicator lamp - M6- and/or Right rear turn in- dicator lamp - M8-

- ☐ P21W - 12V.

#### 5 - Left tail light lamp - M4- and/ or Right tail light lamp - M2-

- ☐ W5W - 12V.

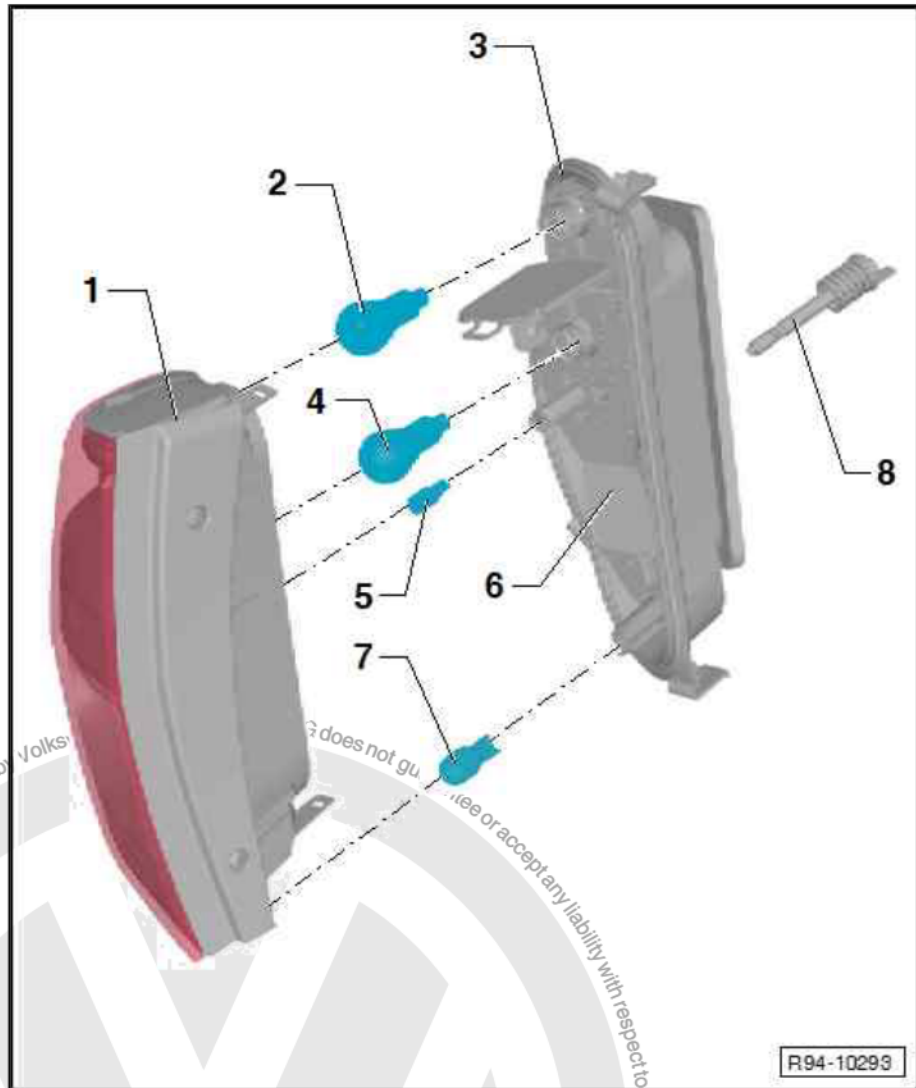
#### 6 - Lamp support

- ☐ Disassemble and as-  
semble ⇒ [page 109](#) .

#### 7 - Left reverse gear light lamp - M16- and/or Right reverse gear light lamp - M17-

- ☐ W16W - 12V.

#### 8 - Fastening element



## 5.2 Tail light (Fox/Crossfox) - remove and install



### Note

*Removing and installing the tail lights is identical on both sides;  
the procedure below refers only to one side.*

#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ⇒ [page 1](#) .
- Remove the fastening element -1- from tail light.
- Move away the luggage compartment side lining ⇒ General body repairs, interior; Rep. gr. 70 ; Lining / insulation , until enough space is freed to access the rear of the tail light.



- Disconnect the connector.
- Remove securing bolts -2-.
- Remove the tail light.

#### Installation:

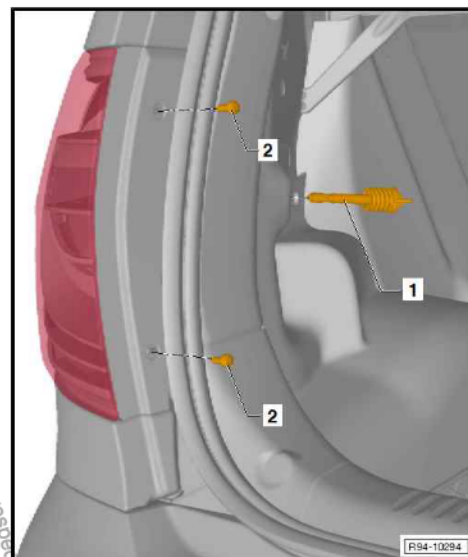
Installation is performed in reverse sequence to that of removal, observing the following:

- Tighten fastening element -1- to a torque of (2 Nm).
- Tighten fastening screws -2- to (1.5 Nm) torque.
- After installation, check if the tail light works.



#### Note

*Ensure proper sealing when installing the tail lights to avoid water infiltration and damages to parts.*



### 5.3 Tail light lamp support (Fox/Crossfox) - disassemble and assemble

#### Disassembly:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➤ [page 1](#) .
- Remove the tail light ➤ [page 108](#) .
- Press fastening locks -arrows- and remove the lamp support.

#### Assembly:

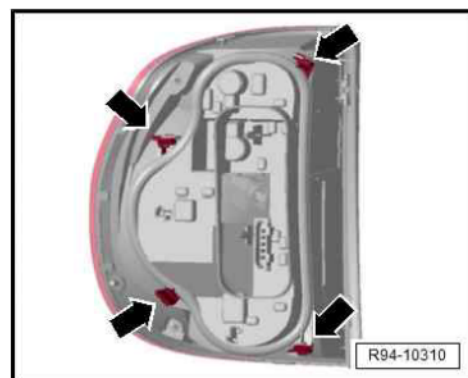
Assembly is performed in the reverse order to disassembly, observing the following:

- Replace damaged bulbs if necessary.
- After installation, check the new lamp functioning.



#### Note

*Ensure proper sealing when installing the light brackets to avoid water infiltration and damages to parts.*



### 5.4 Tail lights (Spacefox/Suran) - assembly overview



1 - Lamp support

- ☐ Disassemble and assemble => [page 112](#).

2 - Left brake light and tail light lamp - M21- and/or Right brake light and tail light lamp - M22-

- ☐ P21/5W - 12V.

3 - Lamp support

4 - Lamp support

5 - Left tail light lamp - M4- and/or Right tail light lamp - M2-

- ☐ W5W - 12V.

6 - Left rear fog light lamp - L46-

- ☐ H21W - 12V.

7 - Left reverse gear light lamp - M16- and/or Right reverse gear light lamp - M17-

- ☐ W16W - 12V.

8 - Centre tail light (rear lid)

- ☐ Remove and install => [page 112](#).

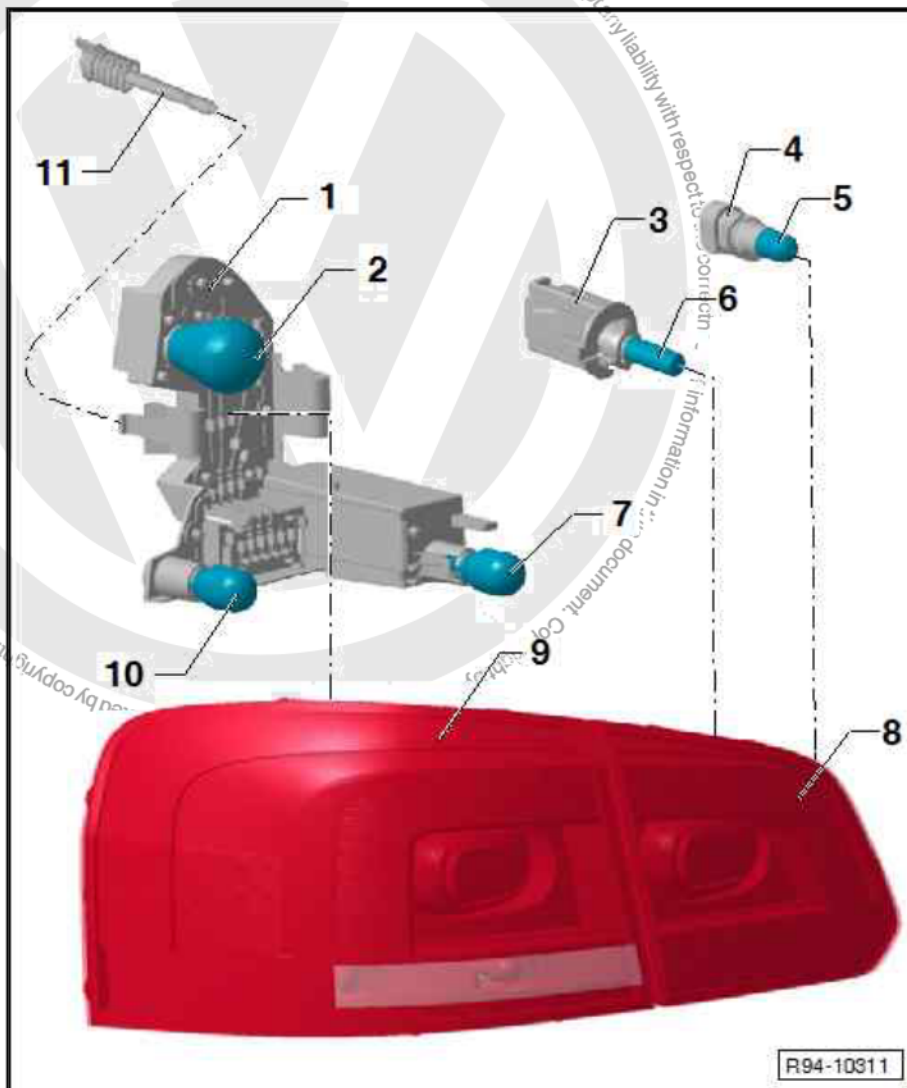
9 - Tail light

- ☐ Remove and install => [page 110](#).

10 - Left rear turn indicator lamp - M6- and/or Right rear turn indicator lamp - M8-

- ☐ W16W - 12V.

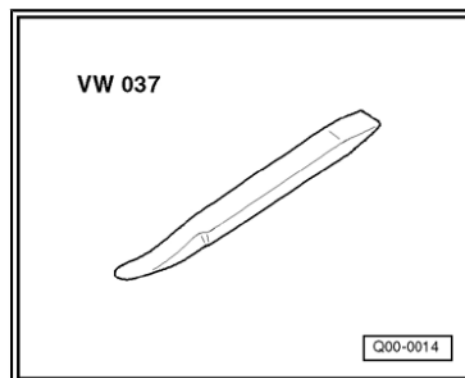
11 - Fastening element



## 5.5 Tail light (Spacefox/Suran) - remove and install

Special tools and workshop equipment required

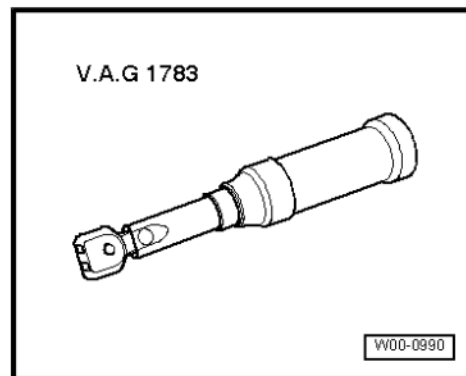
- ◆ Spatula - VW 037-







- ◆ Torque wrench 2 to 10 Nm - VAG 1783-



#### Note

*Removing and installing the tail lights is identical on both sides; the procedure below refers only to one side.*

#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Remove the clips -1- using a Scraper - VW 037- .
- Disconnect the connector.



#### Note

*To better view the fastening element -2-, the luggage compartment lining (detail) is not represented.*

- Remove the fastening element -2- from tail light.
- Remove securing bolts -3-.
- Remove the tail light -1-.

#### Installation:

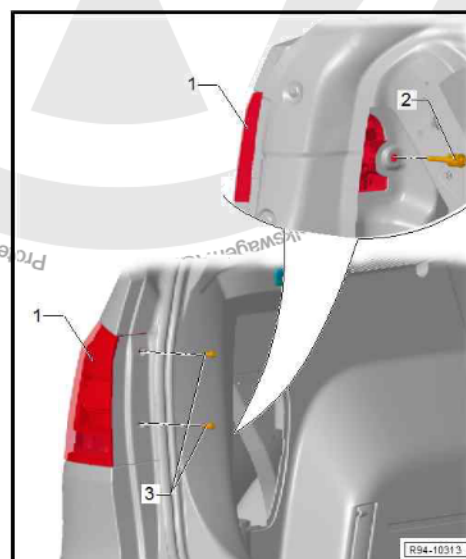
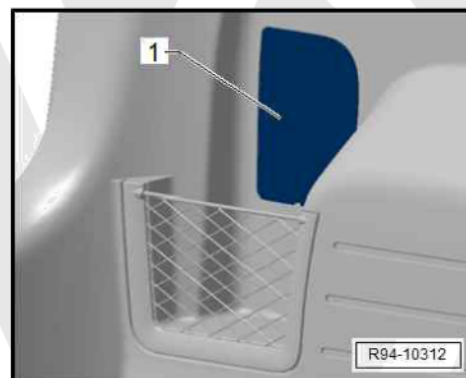
Installation is performed in reverse sequence to that of removal observing the following:

- Tighten fastening screws -3- to (1.5 Nm) torque.
- Tighten fastening element -2- to a torque of (2 Nm).
- After installation, check if the tail light works.



#### Note

*Ensure proper sealing when installing the tail lights to avoid water infiltration and damages to parts.*





## 5.6 Tail light lamp support (Spacefox/Suran) - disassemble and assemble

### Disassembly:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Remove the tail light ➔ [page 110](#) .
- Press fastening locks -arrows- and remove the lamp support.

### Assembly:

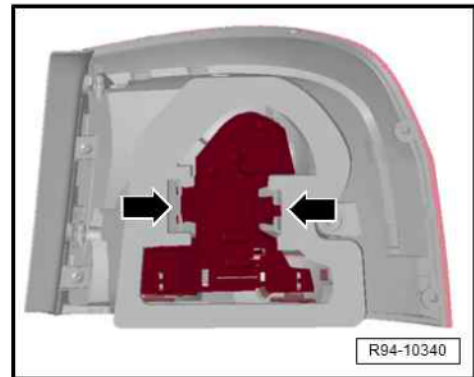
Assembly is performed in the reverse order to disassembly, observing the following:

- After installation, check the light functioning.



### Note

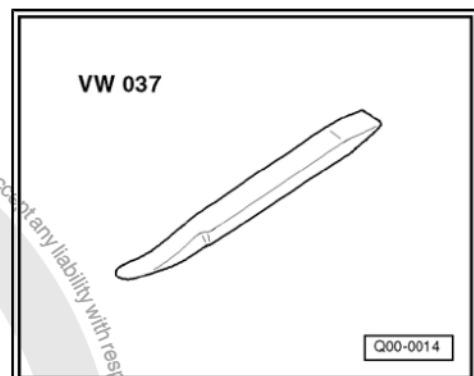
*Ensure proper sealing when installing the light brackets to avoid water infiltration and damages to parts.*



## 5.7 Centre tail light “rear lid” (Spacefox/Suran) - remove and install

Special tools and workshop equipment required

- ◆ Spatula - VW 037-



### Note

*Removing and installing the tail lights is identical on both sides; the procedure below refers only to one side.*

### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Remove the rear lid lamp cover ➔ General body repairs, interior; Rep. gr. 70 ; Lining / insulation .
- Disconnect the connector.



- Remove the fastening nuts -arrows- from the tail light.
- Remove the tail light.

#### Installation:

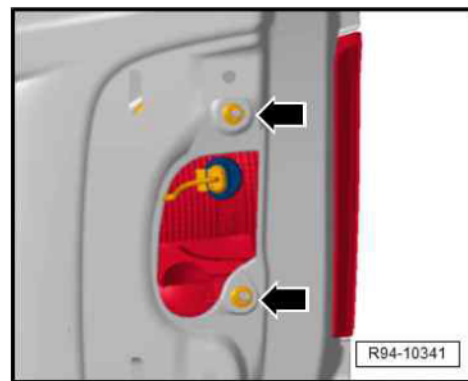
Installation is performed in reverse sequence to that of removal, observing the following:

- Tighten the securing nuts -arrows- to a (1.5 Nm) torque.
- After installation, check if the tail light works.



#### Note

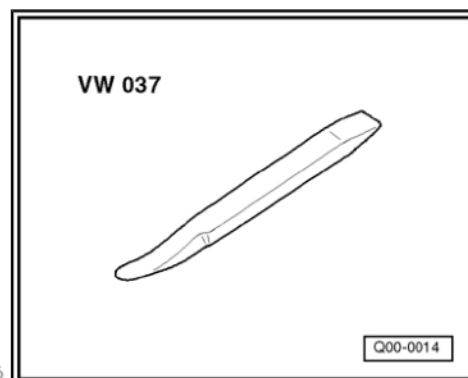
*Ensure proper sealing when installing the centre tail lights "rear lid" to avoid water infiltration and damages to parts.*



## 5.8 Left rear fog light lamp -L46- (Spacefox/ Suran) - replace

Special tools and workshop equipment required

- ◆ Spatula - VW 037-



#### Note

*Lamp replacement does not require tail fog light removal.*

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Remove the rear lid lamp cover ➔ General body repairs, interior; Rep. gr. 70 ; Lining / insulation .
- Disconnect the connector.
- Release the socket -1- by turning it towards the -arrow-.





## 6 Fog lights



### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ [page 1](#) .*



### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

### 6.1 Tail fog light (Fox/Crossfox) - remove and install

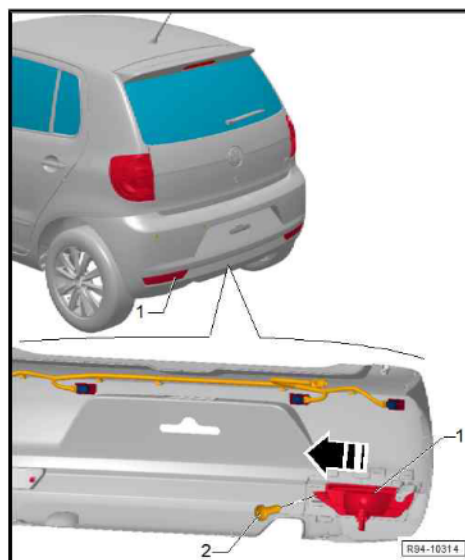
#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Remove the rear bumper ➔ Body - external assembly works; Rep. gr. 63 ; Bumpers .
- Loosen fastening screw -2- and move tail fog light -1- towards -arrow-.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Tighten fastening screw -2- with (1.5 Nm) torque.
- After installation, check if the tail fog light works.



### 6.2 Tail fog light lamp -L20- (Fox/Crossfox) - replace



### Note

*Lamp replacement does not require tail fog light removal.*



- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Disconnect the connector.
- Detach the socket by turning it in direction of the -arrow-.
- Install a new light and check that it works properly.





## 7 License plate light



### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ [page 1](#) .*

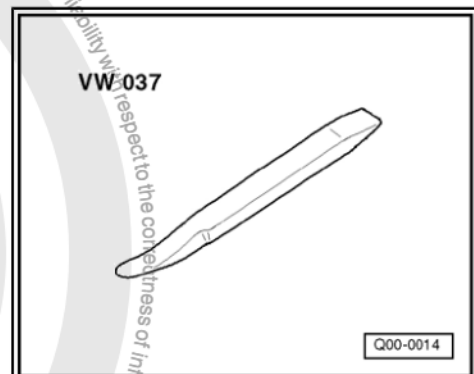


### Note

- ◆ Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .
- ◆ The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).
- ◆ When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.

### Special tools and workshop equipment required

- ◆ Spatula - VW 037-



### 7.1 License plate light (Fox) - remove and install

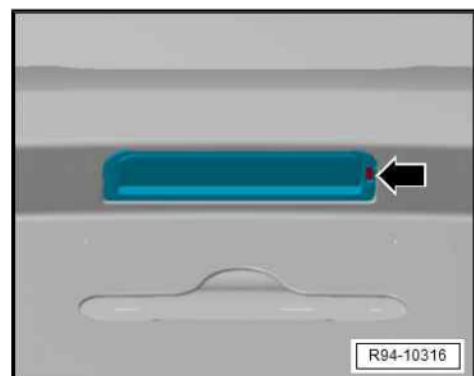
#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Release the lock -arrow- of license plate light.
- Disengage the license plate light from its housing, and release its connector.
- Remove the license plate light.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- After installing, check the license plate light functioning.







## 7.2 Number plate light -X- (Fox) - replace bulb

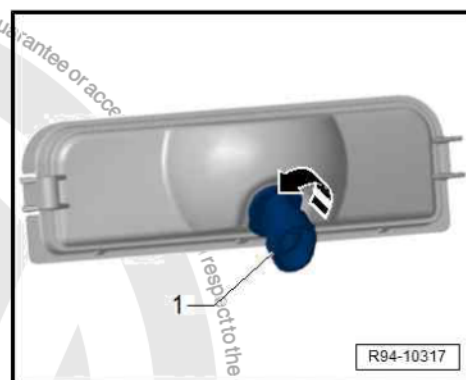
### Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➤ [page 1](#) .
- Remove the license plate light ➤ [page 116](#) .
- Release the socket -1- by turning it towards the -arrow-.

### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Install a new light and check that it works properly.



## 7.3 License plate light (CrossFox) - remove and install

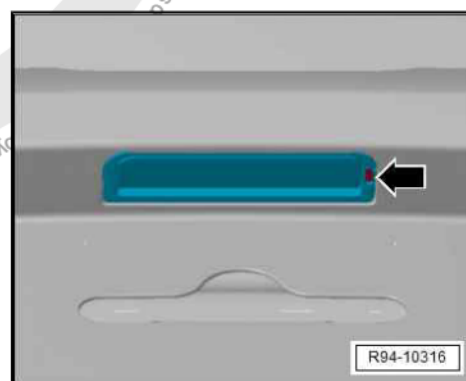
### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➤ [page 1](#) .
- Release the lock -arrow- of license plate light.
- Disengage the license plate light from its housing, and release its connector.
- Remove the license plate light.

### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- After installing, check the license plate light functioning.



## 7.4 License plate light -X- (Crossfox) - replace lamp

### Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➤ [page 1](#) .
- Remove the license plate light ➤ [page 117](#) .

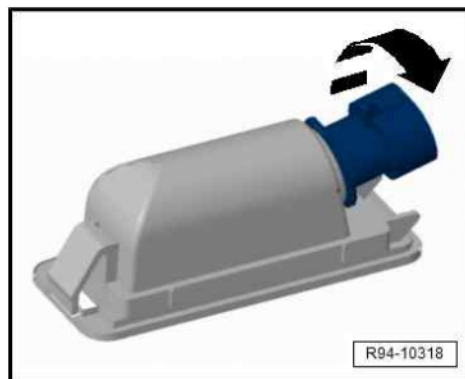


- Detach the socket by turning it in direction of the -arrow-.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Install a new light and check that it works properly.



## 7.5 Number plate light (Spacefox/Suran) - remove and install

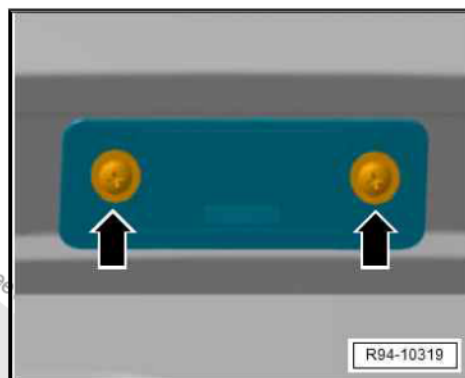
#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➤ [page 1](#) .
- Remove the securing bolts -arrows-.
- Disengage the tail light carefully, and release its connector.
- Remove the lamp from the rear lid.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- After installing check the license plate light functioning.



## 7.6 License plate light -X- (Spacefox/Suran) - replace lamp

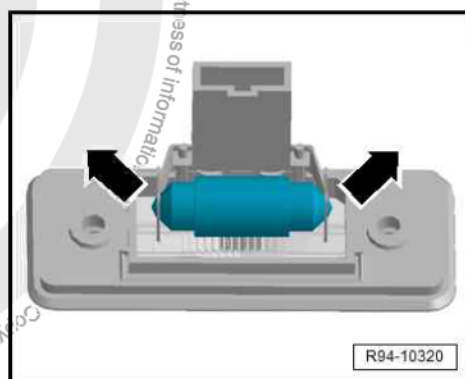
#### Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➤ [page 1](#) .
- Remove the license plate light ➤ [page 118](#) .
- Press locks towards -arrows-.
- Remove the lamp.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Install a new light and check that it works properly.





## 8 Additional brake light



### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ [page 1](#) .*



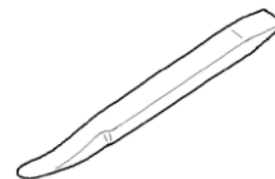
### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

### Special tools and workshop equipment required

- ◆ Spatula - VW 037-

VW 037

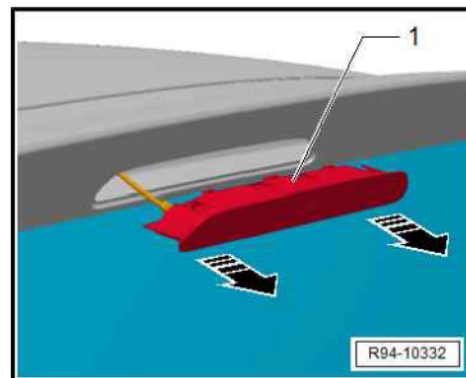


Q00-0014

### 8.1 Auxiliary brake light - remove and install

#### Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Remove auxiliary brake light -1-carefully using the Spatula - VW 037- .



R94-10332

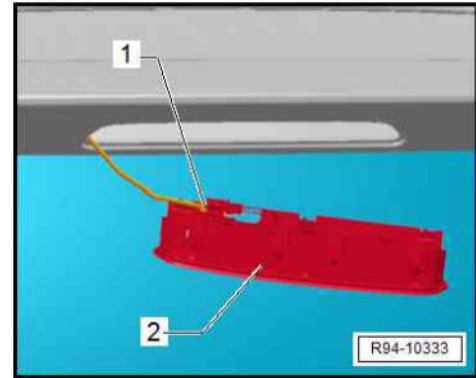


- Disengage the connector -1- and remove the auxiliary brake light-2-.

**Installation:**

Installation is performed in reverse sequence to that of removal, observing the following:

- After installing, check functioning.





## 9 Switch set



### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ [page 1](#) .*



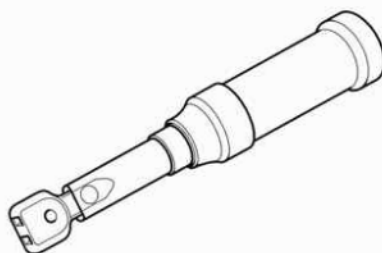
### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

Special tools and workshop equipment required

- ◆ Torque wrench 2 to 10 Nm - VAG 1783-

V.A.G 1783



Q00-10085

### 9.1 Direction and wiper switches / glasses washer (version 1) - remove and install

#### Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Place the steering wheel in centre position (straight wheels).
- Remove the steering wheel. ➔ Chassis, axles, steering; Rep. gr. 48 ; Steering .
- Remove the steering column trim ➔ General body repairs, interior; Rep. gr. 70 ; Linings/insulations .

If necessary, for versions with airbag:

- Remove the airbag coil contact and return coil w / slip ring - F138- (if necessary) ➔ Body - Works mounting internal; Rep. gr. 69 ; Occupant protection .





For all the versions:

- Loosen fastening screw-1 - from the switch set.
- Disconnect connectors -arrows- from switch set.
- Remove the switch set.

Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Place the switch set through the points indicated by the -arrows-.



#### WARNING

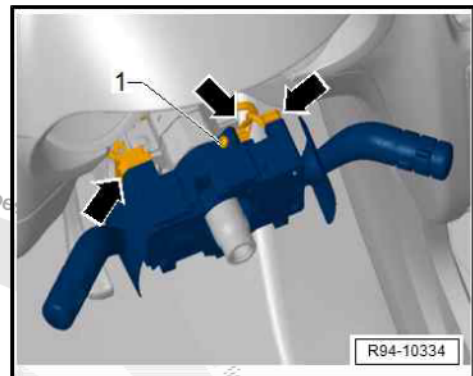
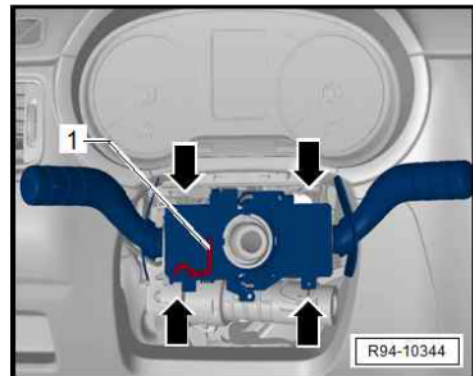
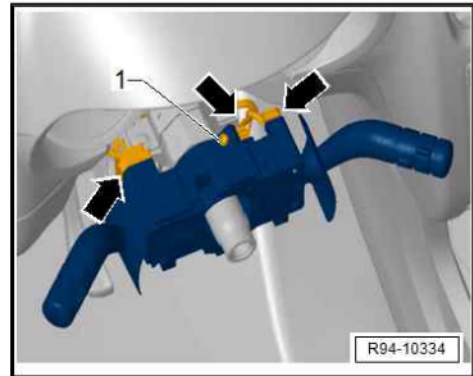
- ♦ *Be careful not to press the horn contact spring -1- during assembly, in order to prevent operation impairment.*

- Screw on the fastening screw -1- with torque of (3 Nm).



#### Note

*After assembly, conduct a thorough verification of the switch set for possible interferences.*



## 9.2 Direction and wiper switches / glasses washer (version 2) - remove and install

Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Place the steering wheel in centre position (straight wheels).
- Remove the steering wheel. ➔ Chassis, axles, steering; Rep. gr. 48 ; Steering .
- Remove the steering column trim ➔ General body repairs, interior; Rep. gr. 70 ; Linings/insulations .
- If necessary, remove the airbag coil contact and return coil w / slip ring - F138- (if necessary) ➔ Body - Works mounting internal; Rep. gr. 69 ; Occupant protection .



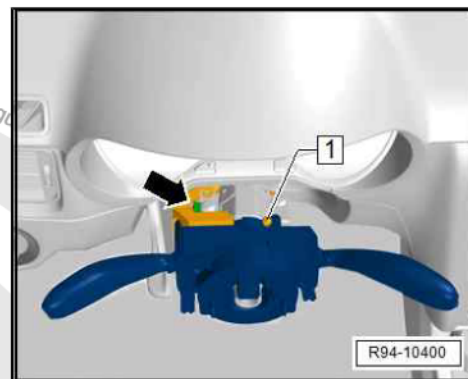


- Loosen fastening screw-1 - from the switch set.
- Disconnect the connector by releasing the lock -arrow-
- Remove the switch set.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Screw on the fastening screw -1- with torque of (3 Nm).



### 9.3 Connectors pinout in the switch set for turn lights and window wipers/washers

The pinout of the switch set connectors for turn lights and window wipers/washers is described in the electrical diagrams ⇒ Current flow diagrams. Electrical fault finding and Fitting locations.



## 10 Steering lock set



### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ [page 1](#) .*



### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

### 10.1 Steering lock set - remove and install

#### Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Remove the turn signal light and wiper/washer switch ➔ [page 121](#) .
- Remove the key cylinder ➔ [page 126](#) .
- Remove the ignition and starter switch ➔ [page 128](#) .
- Remove the snap bolts -arrows- using a drill with a suitable drill bit or chisel, if necessary.



### WARNING

*Wear goggles.*

- Remove the steering lock set.

#### Installation:

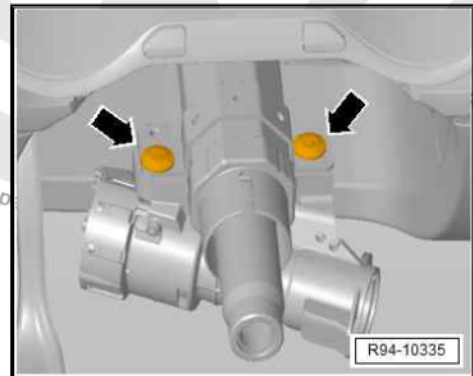
Installation is performed in reverse sequence to that of removal, observing the following:

- Position the steering lock set.



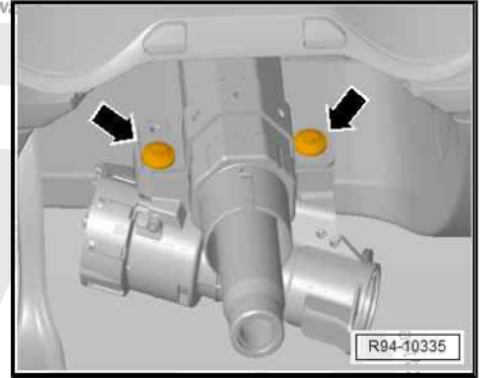
### Note

*Check the positioning of the steering lock set in the steering column.*





- Carefully tighten the snap bolts until their heads -arrows- snap.
- Install the turn indicator and wiper/washer switches  
⇒ [page 121](#) .
- Install the lock cylinder ⇒ [page 126](#)
- Install the ignition and starter switch ⇒ [page 128](#) .





## 11 Ignition/starter switch and key cylinder



### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ [page 1](#) .*



### Note

- ◆ Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .
- ◆ The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).
- ◆ When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.

### 11.1 Key cylinder - remove and install

#### Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Place the steering wheel on the central position (straight wheels).
- Remove the steering wheel ➔ Running gear, axles, steering; Rep. gr. 48 ; Steering .
- Remove upper and lower steering column coverings ➔ General body repairs, interior; Rep. gr. 70 ; Linings/insulations
- Carefully disconnect the connector -arrow- from the Immobilizer reading coil - D2- in the key cylinder.



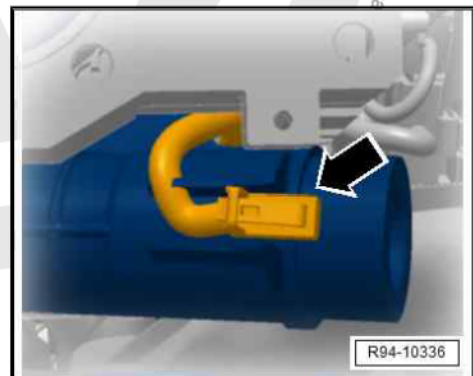
### Note

*The Immobilizer reader coil - D2- is fastened to the key cylinder and cannot be replaced individually.*

- Insert the ignition key in the key cylinder, and turn to "on" position.

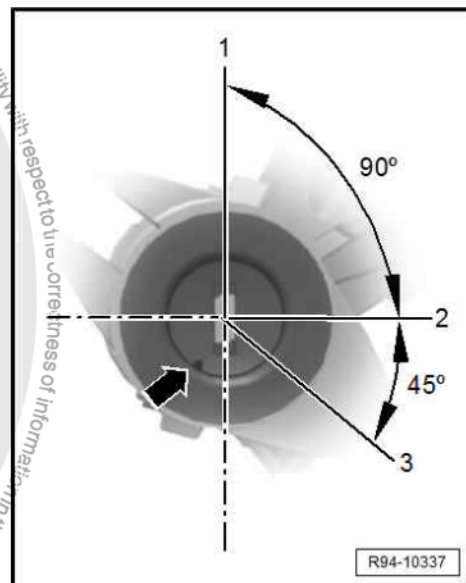
#### Key positions in the key cylinder:

- 1 - Off "position"
- 2 - On "position"
- 3 - Start "position"





- Insert a steel wire (approx.  $\varnothing 1.2$  mm) in the hole beside the key cylinder -arrow-.



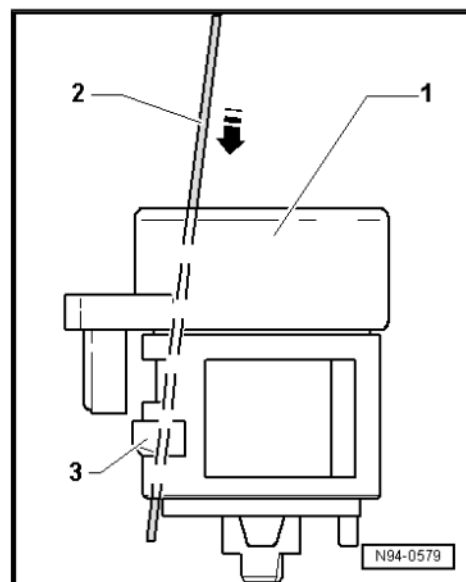
- Unlock the safety lever from the key cylinder with the steel wire -arrow-, and extract the key cylinder from the steering lock set.

- 1 - Key cylinder
- 2 - Steel wire (approx.  $\varnothing 1.2$  mm)
- 3 - Safety lever

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

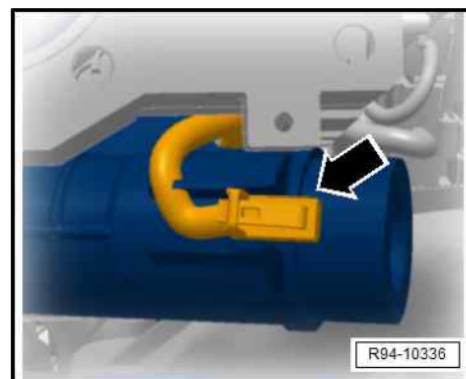
- Insert the ignition key in the key cylinder, and turn to "on" position.
- Unlock the retention lever with a wire (approx.  $\varnothing 1.2$  mm) and place the key cylinder in the steering lock set.



#### Note

*When positioning the key cylinder, make sure that the Immobilizer reader coil - D2- connection is in the steering lock set guide.*

- Remove the wire from the key cylinder and check if the cylinder seats correctly in the steering lock set.
- Engage the connector -arrow- for the Immobilizer reading coil - D2- in the key cylinder.





## 11.2 Ignition/starter switch -D- - remove and install

### Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➤ [page 1](#).
- Remove the turn signal light and wiper/washer switches (version 1) ➤ [page 121](#).
- Remove the turn signal light and wiper/washer switches (version 2) ➤ [page 122](#).
- Disconnect the multi-pin connector from the Ignition switch - D-.
- Remove the sealing paint from fastening screws -1-.
- Release the securing bolts -1- and extract the Ignition switch - D- in the direction of the -arrow- from the steering lock housing.

### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

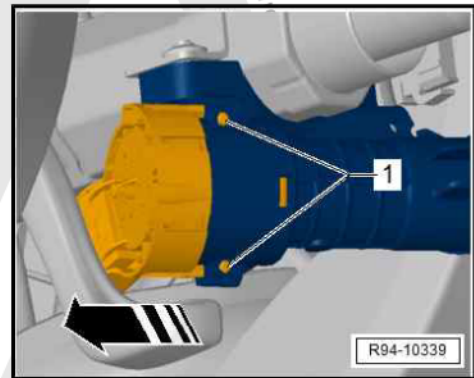
- Insert the Ignition Switch - D- in the steering lock set.



### Note

*While installing, make sure the Ignition switch - D- and the key cylinder are at the same position, for example "ignition on".*

- Tighten the fastening screws and seal with sealing paint.
- Connect the multi-pin connector to the Ignition switch - D-.



## 11.3 Ignition switch -D- - pinout

The pinout of the Ignition switch - D- is described in the electrical diagrams ➤ Current flow diagrams, Electrical fault finding and Fitting locations.





## 12 Auxiliary parking system



### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ page 1 .*



### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

### General description:

The auxiliary parking system and /or PDC (Park Distance Control) assists the driver to park by measuring the distance between the rear bumper and the obstacle behind the vehicle, and indicating this information through an audible alarm.

The auxiliary parking system is comprised by the elements below:

- ◆ o Control unit for parking aid - J446-
- ◆ o Warning buzzer for rear parking aid - H15-
- ◆ o Parking aid sensor, left rear - G203-
- ◆ o Parking aid sensor, left rear, centre - G204-
- ◆ o Parking aid sensor, right rear, centre - G205-
- ◆ o Parking aid sensor, right rear - G206-

### 12.1 Locating defects and indicating faults

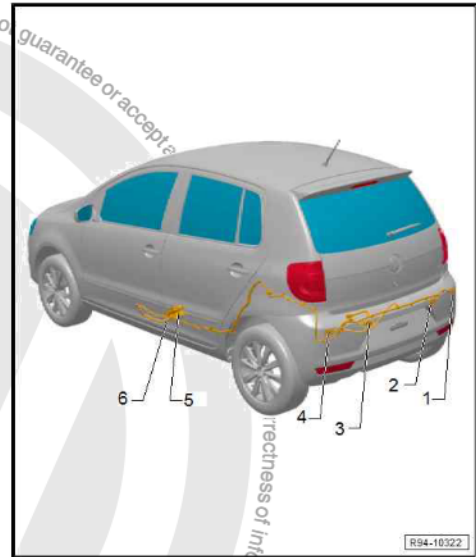
The auxiliary parking system is equipped with a self-diagnosis function.

For fault location, one must use System diagnostic vehicular and Technical Information - VAS 5052A- or further equipment ➔ General information; Rep. gr. 97 ; Cables and harnesses .

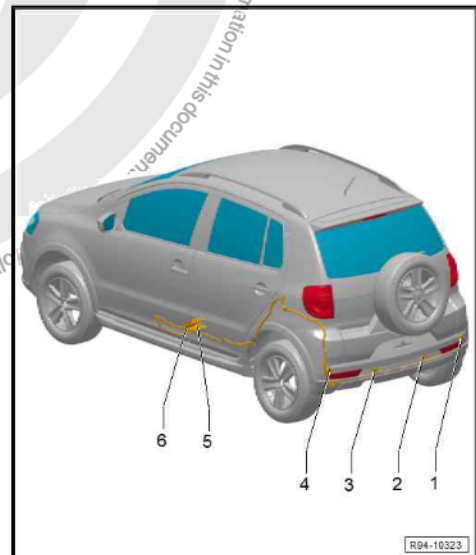


## 12.2 Auxiliary parking system - assembly general view

Fox:



CrossFox:



Spacefox / Suran:



1 - Parking aid sensor, right rear - G206-

- ☐ Located on rear bumper covering.
- ☐ Remove and install (Fox) ➤ [page 134](#) .
- ☐ Remove and install (Crossfox) ➤ [page 134](#) .
- ☐ Remove and install (Spacefox / Suran) ➤ [page 135](#) .

2 - Parking aid sensor, right rear, centre - G205-

- ☐ Located on rear bumper covering.
- ☐ Remove and install (Fox) ➤ [page 134](#) .
- ☐ Remove and install (Crossfox) ➤ [page 134](#) .
- ☐ Remove and install (Spacefox / Suran) ➤ [page 135](#) .

3 - Parking aid sensor, left rear, centre - G204-

- ☐ Located on rear bumper covering.
- ☐ Remove and install (Fox) ➤ [page 134](#) .
- ☐ Remove and install (Crossfox) ➤ [page 134](#) .
- ☐ Remove and install (Spacefox / Suran) ➤ [page 135](#) .

4 - Parking aid sensor, left rear - G203-

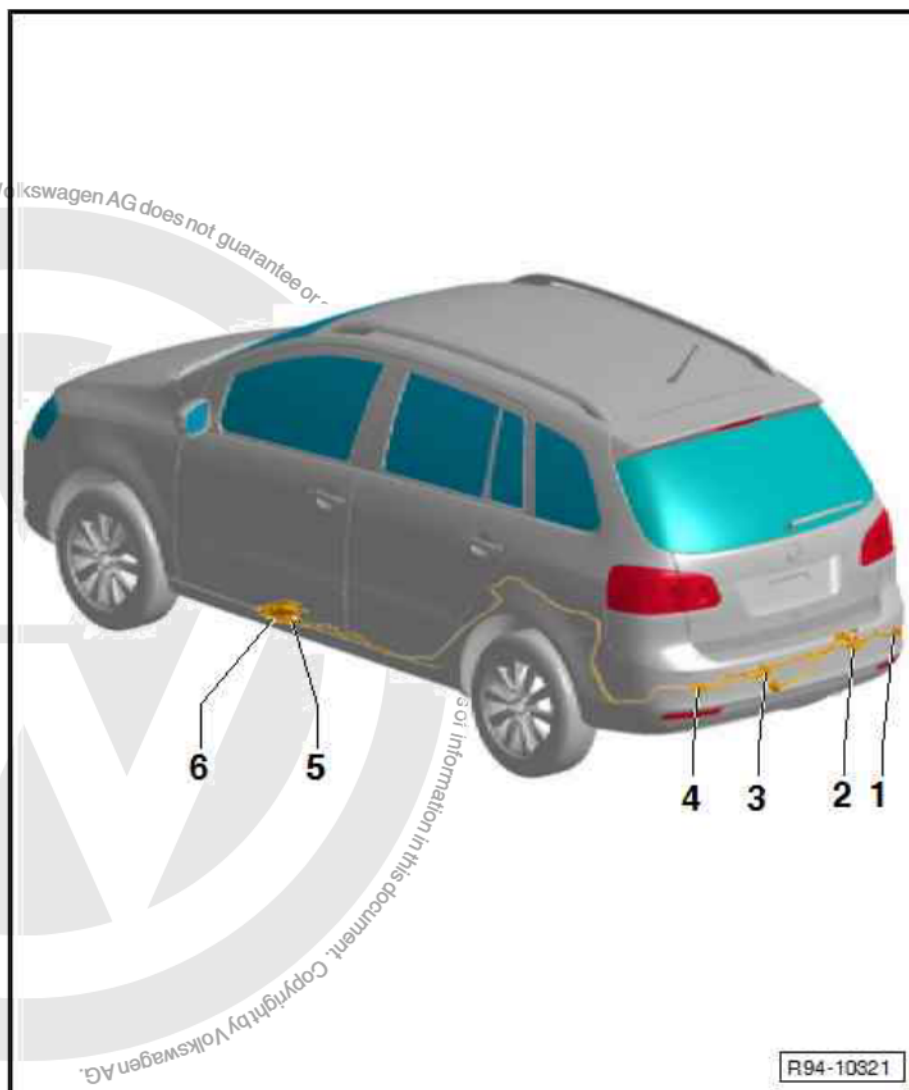
- ☐ Located on rear bumper covering.
- ☐ Remove and install (Fox) ➤ [page 134](#) .
- ☐ Remove and install (Crossfox) ➤ [page 134](#) .
- ☐ Remove and install (Spacefox / Suran) ➤ [page 135](#) .

5 - Warning buzzer for rear parking aid - H15-

- ☐ Located under driver's seat.
- ☐ Remove and install ➤ [page 132](#) .

6 - Control unit for parking aid - J446-

- ☐ Located under driver's seat.
- ☐ Remove and install ➤ [page 131](#) .



## 12.3 Control unit for parking aid -J446- - remove and install

### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.



- Disconnect the Battery - A- ➤ [page 1](#) .
- Remove driver's seat ➤ Body - Internal assembly work; Rep. gr. 72 ; Seat framework .
- Remove fastening nuts -4- from module support -3-.
- Disconnect connectors and remove Control unit for parking aid - J446- -1- along with module support -3-.
- Remove fastening nuts -2- and remove the Control unit for parking aid - J446- -1-.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:



#### Note

- ♦ After installing the new Control unit for Park Assist steering - J446- , it is necessary to perform its coding.
- ♦ For coding, using System diagnostic vehicular and Technical Information - VAS 5052A- or further equipment ➤ General information; Rep. gr. 97 ; Cables and harnesses .

- Tighten securing nuts -2- with (1 Nm) torque.
- Tighten securing nuts -4- with (5 Nm) torque.

## 12.4 Warning buzzer for rear parking aid - H15- - remove and install

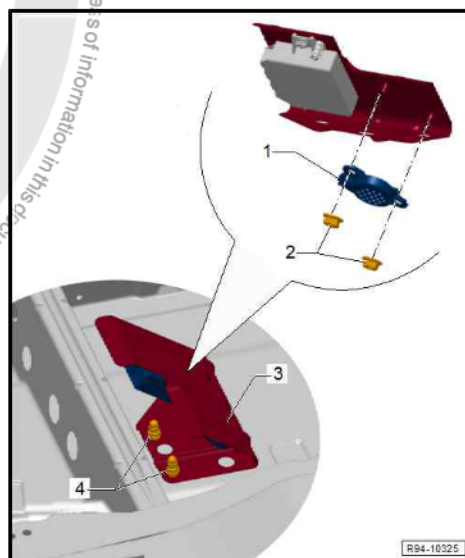
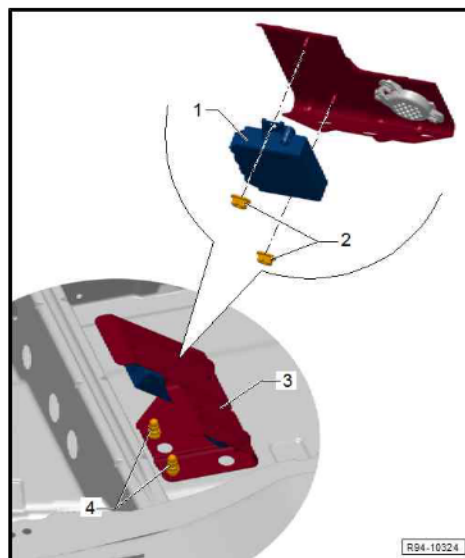
#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➤ [page 1](#) .
- Remove driver's seat ➤ Body - Internal assembly work; Rep. gr. 72 ; Seat framework .
- Remove fastening nuts -4- from module support -3-.
- Disconnect connector and remove the Warning buzzer for rear parking aid - H15- -1- along with the module support -3-.
- Remove fastening nuts -2- and remove the Warning buzzer for rear parking aid - H15- -1-.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- After installation, check if the Warning buzzer for rear Park Assist steering - H15- is functioning.
- Tighten securing nuts -2- with (1 Nm) torque.
- Tighten securing nuts -4- with (5 Nm) torque.





## 12.5 Parking aid sensor - remove and install



Note

*Removal and installation of the rear auxiliary parking system are identical for the 4 sensors, and the description refers to one sensor only.*

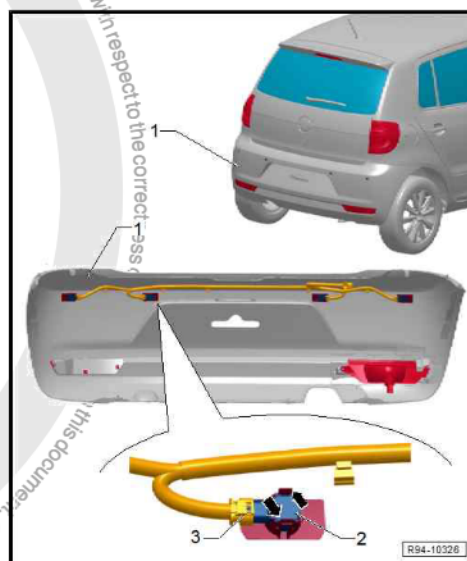
### 12.5.1 Parking aid sensor (Fox) - remove and install

#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➤ [page 1](#) .
- Remove the rear bumper -1- ➤ General body repairs, exterior; Rep. gr. 63 ; Bumpers .
- Disconnect the connector -3- from the Park Pilot sensor -2-.
- Carefully press the latches -arrows- and remove parking aid sensor -2- by pulling it.

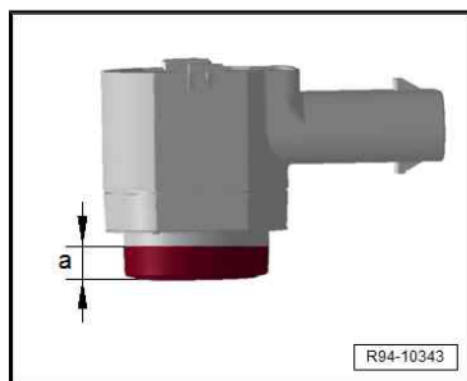
#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:



Note

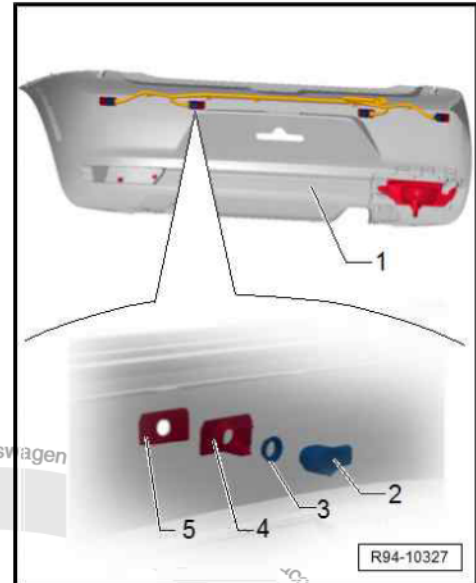
- ◆ *The supports and sensors are supplied without painting.*
- ◆ *The sensor supports must be placed before the bumper covering is painted, and the sensors must be painted before assembly.*
- ◆ *Sensors may be painted with a layer of 100 µm only. To paint the sensors, it is necessary to disconnect the connector.*
- ◆ *Avoid mechanical damages or damages caused by chemical agents to the sensors.*
- ◆ *The measurement for painting -a- is 3 + 2 mm.*







- Slightly sand bumper lining -5- internal surface -1-.
- Remove adhesive tape protection.
- Position supports-4 - in order to align them in parallel to the upper bumper covering area -1-.
- When gluing the support, press it firmly.
- Check sealing ring -3-correct position.
- Fit parking aid sensor -2- to sensor support -4-.



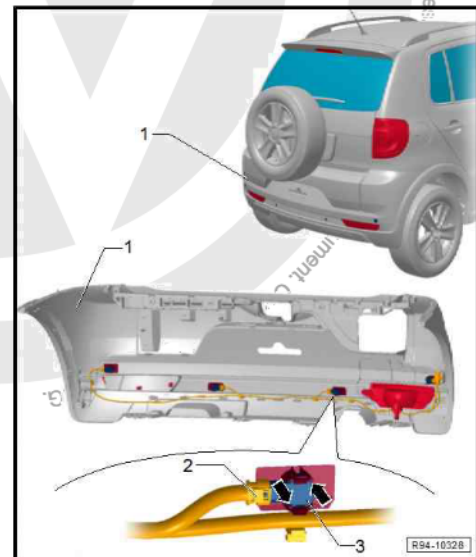
### 12.5.2 Parking aid sensor (CrossFox) - remove and install

#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A ➔ [page 1](#) .
- Remove the rear bumper -1 ➔ General body repairs, exterior; Rep. gr. 63 ; Bumpers .
- Disconnect the connector -2- from the Park Pilot sensor -3-.
- Carefully press the latches -arrows- and remove parking aid sensor -3- by pulling it.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

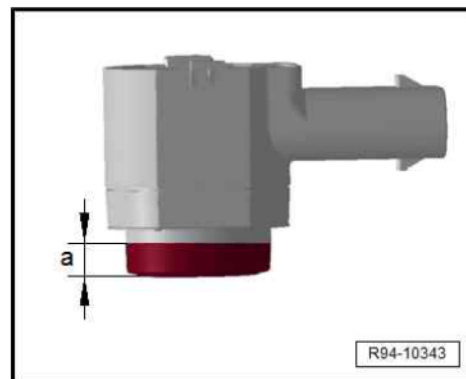




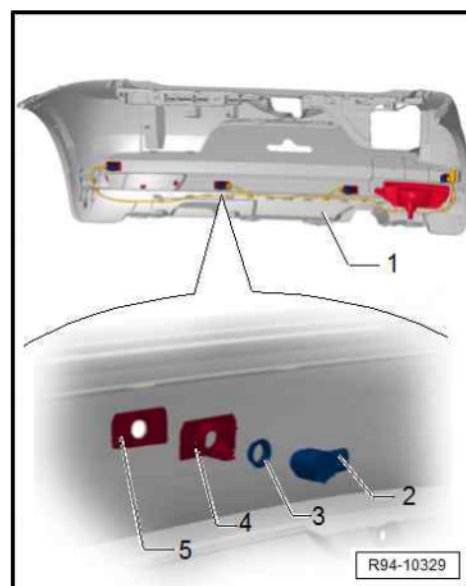


#### Note

- ◆ The supports and sensors are supplied without painting.
- ◆ The sensor supports must be placed before the bumper covering is painted, and the sensors must be painted before assembly.
- ◆ Sensors may be painted with a layer of 100 µm only. To paint the sensors, it is necessary to disconnect the connector.
- ◆ Avoid mechanical damages or damages caused by chemical agents to the sensors.
- ◆ The measurement for painting -a- is 3 + 2 mm.



- Slightly sand bumper lining -5- internal surface -1-.
- Remove adhesive tape protection.
- Position the supports-4- in parallel alignment to the upper bumper trim area -1-.
- When gluing the support, press it firmly.
- Check sealing ring -3-correct position.
- Fit parking aid sensor -2- to sensor support -4-.



### 12.5.3 Park Assist steering sensor (Spacefox/Suran) - remove and install

#### Removal:

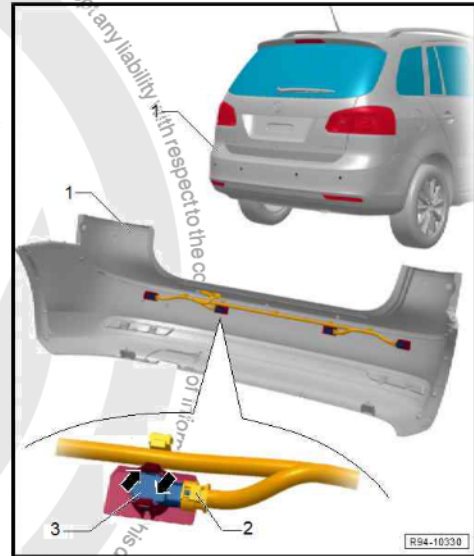
- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .



- Remove the rear bumper -1- → General body repairs, exterior; Rep. gr. 63 : Bumpers .
- Disconnect the connector -2- from the Park Pilot sensor -3-.
- Carefully press the latches -arrows- and remove parking aid sensor -3- by pulling it.

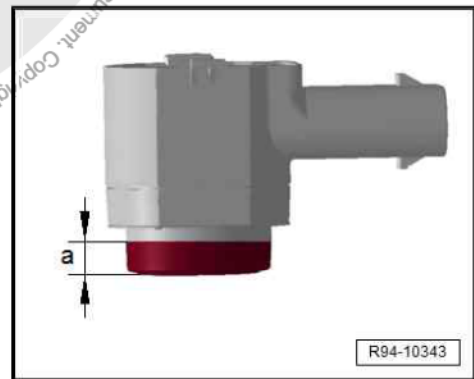
#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

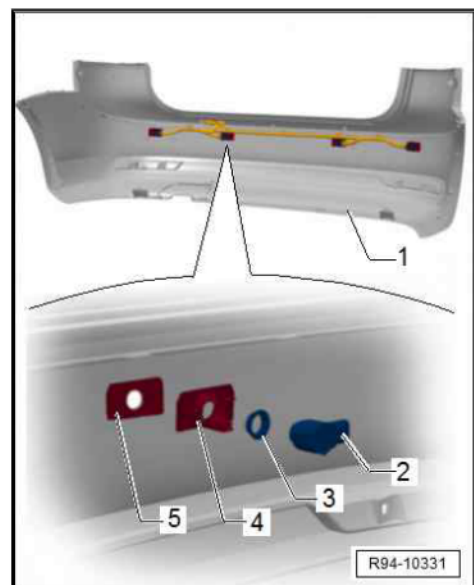


#### Note

- ◆ The supports and sensors are supplied without painting.
- ◆ The sensor supports must be placed before the bumper covering is painted, and the sensors must be painted before assembly.
- ◆ Sensors may be painted with a layer of 100 µm only. To paint the sensors, it is necessary to disconnect the connector.
- ◆ Avoid mechanical damages or damages caused by chemical agents to the sensors.
- ◆ The measurement for painting -a- is 3 + 2 mm.



- Slightly sand bumper lining -5- internal surface -1-.
- Remove adhesive tape protection.
- Position the supports-4- in parallel alignment to the upper bumper trim area -1-.
- When gluing the support, press it firmly.
- Check sealing ring -3- correct position.
- Fit parking aid sensor -2- to sensor support -4-.





## 96 – Lights, bulbs, switches - interior

### 1 Internal lights and switches



#### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ [page 1](#).*



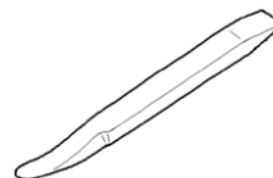
#### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A-.*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A-, earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

Special tools and workshop equipment required

- ◆ Spatula - VW 037-

VW 037



Q00-0014

#### 1.1 Cabin surveillance deactivation switch - E267- - remove and install



#### Note

*The Cabin surveillance deactivation switch - E267- is installed on the lower lining of B-pillar, driver's side.*

#### Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➔ [page 1](#).

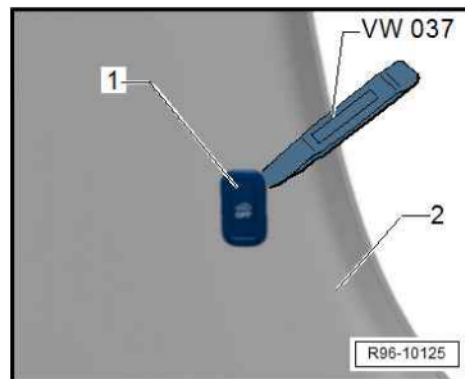


- Carefully disengage the Cabin surveillance deactivation switch - E267- -1- with a Spatula - VW 037- .
- Disconnect the connector and remove the Interior monitoring deactivation switch - E267- -1- from B-pillar lining -2- (left side of the vehicle).

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- After installing the Cabin surveillance deactivation switch - E267- - 3-, check its operation.



## 1.2 Dashboard switches - remove and install (version 1)



#### Note

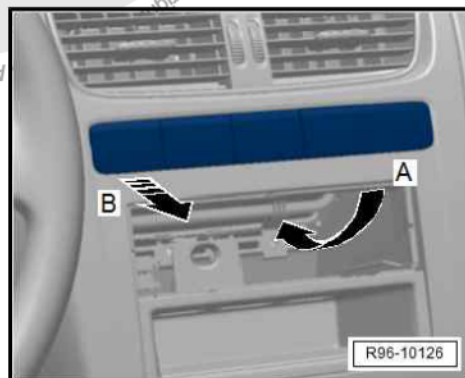
- ◆ *The switches must be removed from the dashboard with their connectors on.*
- ◆ *To enable pulling the switch cable sufficiently, you may have to remove the switch beside the cable.*
- ◆ *Covers installed according to each vehicle type may be carefully removed using a Spatula - VW 037- .*
- ◆ *Covers may be removed and installed in a similar way as for the switches.*

#### Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ⇒ [page 1](#) .
- Remove the radio cut-out cover ⇒ General body repairs, interior; Rep. gr. 68 ; Internal equipment .
- Remove the radio ⇒ Communication; Rep. gr. 91 ; Radio, telephone, navigation system .
- Insert your hand through the panel opening as per -arrow A-.
- Press the switches from inside the panel out as per -arrow B-.
- Disconnect the connectors arrow and remove the switches.

#### Installation:

Installation is performed in reverse sequence to the removal.





### 1.3 Dashboard switches (vehicles without radio) - remove and install (version 2)



#### Note

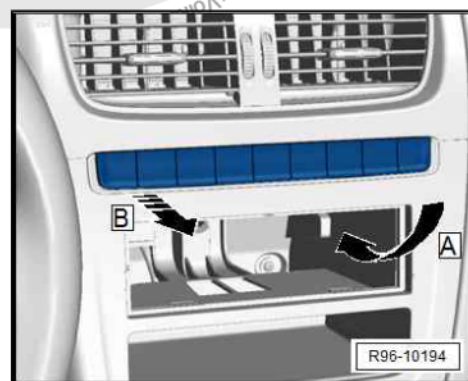
- ◆ *The switches must be removed from the dashboard with their connectors on.*
- ◆ *To enable pulling the switch cable sufficiently, you may have to remove the switch beside the cable.*
- ◆ *Covers installed according to each vehicle type may be carefully removed using a Spatula - VW 037- .*
- ◆ *Covers may be removed and installed in a similar way as for the switches.*

#### Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ⇒ [page 1](#) .
- Remove the radio cut-out cover ⇒ General body repairs, interior; Rep. gr. 68 ; Internal equipment .
- Insert your hand through the panel opening as per -arrow A-.
- Press the switches from inside the panel out as per -arrow B-.
- Disconnect the connectors arrow and remove the switches.

#### Installation:

Installation is performed in reverse sequence to the removal.



### 1.4 Dashboard switches (vehicles with radio) - remove and install (version 3)



#### Note

- ◆ *The switches must be removed from the dashboard with their connectors on.*
- ◆ *To enable pulling the switch cable sufficiently, you may have to remove the switch beside the cable.*
- ◆ *Covers installed according to each vehicle type may be carefully removed using a Spatula - VW 037- .*
- ◆ *Covers may be removed and installed in a similar way as for the switches.*

#### Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ⇒ [page 1](#) .
- Remove the radio ⇒ Communication; Rep. gr. 91 ; Radio, telephone, navigation system .

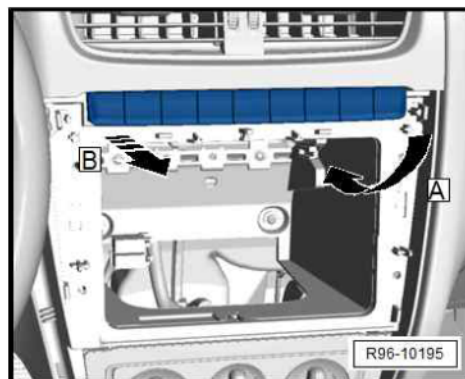




- Insert your hand through the panel opening as per -arrow A-.
- Press the switches from inside the panel out as per -arrow B-.
- Disconnect the connectors arrow and remove the switches.

Installation:

Installation is performed in reverse sequence to the removal.



## 1.5 Light switch -E1- - remove and install

The Light switch - E1- integrate the components below:

- ◆ Fog headlight switch - E7-
- ◆ Fog taillight switch - E18-
- ◆ Light switch lighting lamp - L9-

Removal:



Note

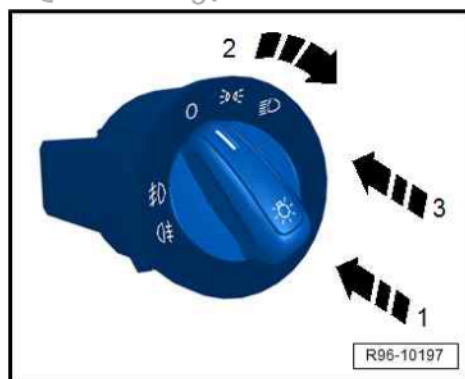
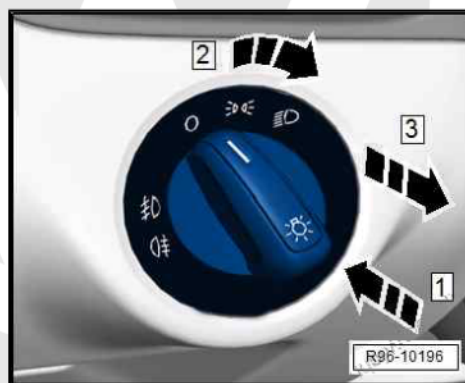
*Switch must be removed from the dashboard with their connectors on.*

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➔ [page 1](#).
- Place the Light switch - E1- on position "0".
- Press firmly the Light switch - E1- -arrow 1- and turn slightly to the right -arrow 2-.
- Keep the button in this position and remove the Light switch - E1- by moving it out of its housing -arrow 3-.
- Disconnect its respective connector.

Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Connect the connector.
- Press firmly the Light switch - E1- button- arrow 1- and turn slightly to the right -arrow 2-.
- Keep the button in this position and move the Light switch - E1- in order to install it in its housing on the instrument panel -arrow 3-.
- Turn the button up to position "0", release and lock the Light switch - E1- .







## 1.6 Glove compartment light -W6-

### 1.6.1 Glove compartment light - W6- - remove and install

#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Carefully disengage the Glove compartment light - W6- -1- with a Spatula - VW 037- to lever it from behind the diffuser lens.
- Disengage connector -2- and remove the Glove compartment light - W6- .

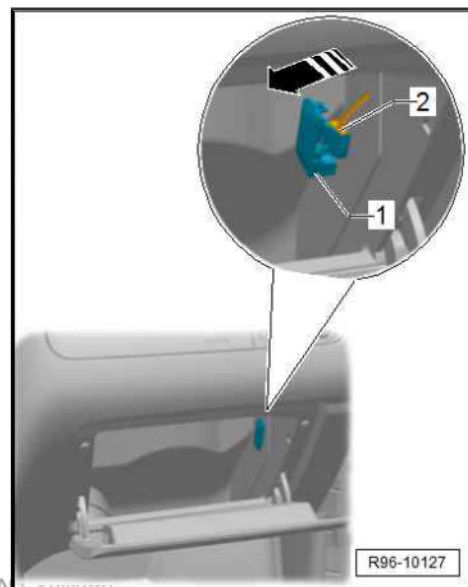
#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:



#### Note

*Check glove compartment switch operation. Light must not be on when glove compartment lid is closed.*



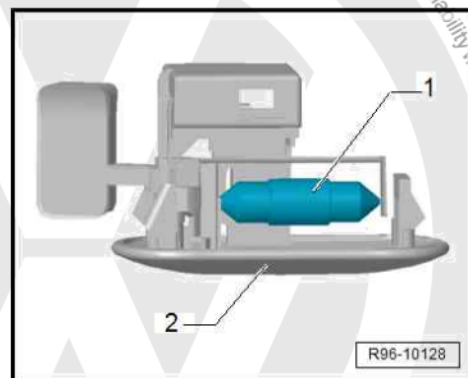
### 1.6.2 Glove compartment light - W6- - replace lamp

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Remove the Glove compartment light -W6- ➔ [page 141](#)
- Remove lamp -1- from diffuser lens -2-



#### Note

*Check glove compartment switch operation. Light must not be on when glove compartment lid is closed.*





## 2 Front door lights and switches



### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ [page 1](#) .*

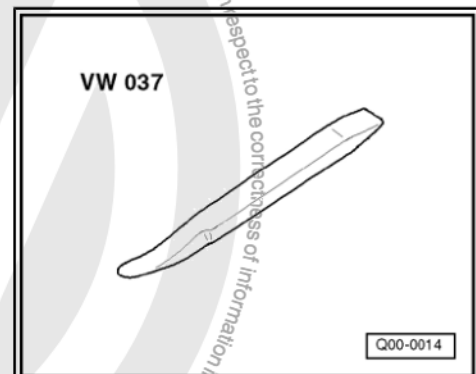


### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

### Special tools and workshop equipment required

- ◆ Spatula - VW 037 - .



### 2.1 Door contact switches - remove and install



### Note

*The removal and installation of contact switches is identical on both sides; the procedure below refers only to one of the switches.*

#### Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Remove the retaining screw -arrow-.



Front door:

- Remove the Driver's door contact switch - F2- and/or Passenger's door contact switch - F3- .

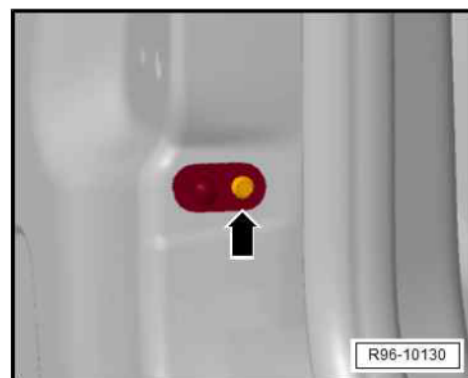
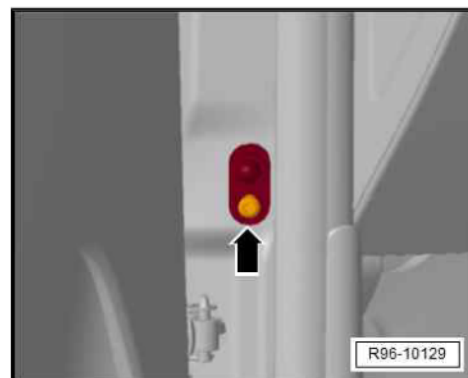
Rear door:

- Left rear door contact switch - F10- and/or Right rear door contact switch - F11- .

Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Tighten the fastening screw to (2 Nm).



## 2.2 Front/rear window drive switches and window lock switch - remove and install



Note

- ♦ *The switch frame is not removable; pictures show them separated for better visualization.*
- ♦ *Switch removal and installation is similar for both sides and only driver's door is depicted herein.*

Removal:

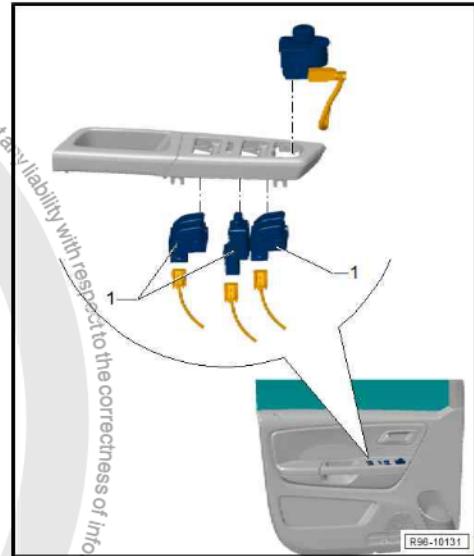
- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A ⇒ [page 1](#) .
- Remove the driver door lining ⇒ General body repairs, interior; Rep. gr. 70 ; Lining / insulation .



- Disengage switches -1- by releasing side locks with a Spatula - VW 037- .

**Installation:**

Installation is performed in reverse sequence to the removal.



### 2.3 Rear-view mirror adjustment switch - E43- with Switch for rear-view mirror adjustment -E48- - remove and install



**Note**

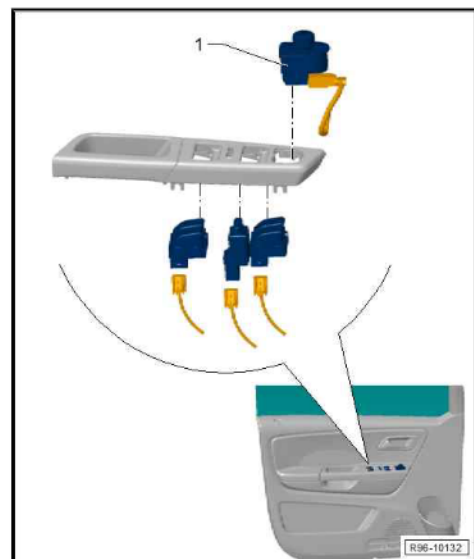
*The switch frame is not removable; pictures show them separated for better visualization.*

**Removal:**

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Remove the driver door lining ➔ General body repairs, interior; Rep. gr. 70 ; Lining / insulation .
- Disengage the mirror adjustment switch - E43- with the mirror adjustment switch - E48- -1-by releasing its side locks with a Spatula - VW 037- .
- Disconnect the connector.
- Remove the mirror adjustment switch - E43- with the mirror adjustment switch - E48- -1-.

**Installation:**

Install in the reverse removal sequence.





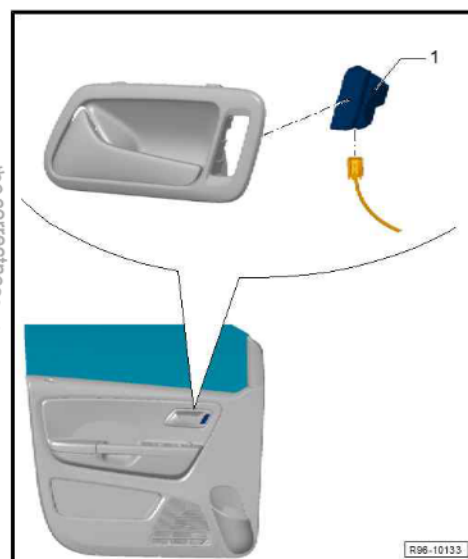
## 2.4 Driver side interior locking switch -E150- - remove and install

### Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Carefully remove handle frame using a Spatula - VW 037-
- Disengage the Driver side interior locking switch - E150- -1- by releasing its side retaining clips with the Spatula - VW 037-.
- Disconnect switch connector.

### Installation:

Install in the reverse removal sequence.





### 3 Lights and switches in luggage compartment



#### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ [page 1](#) .*

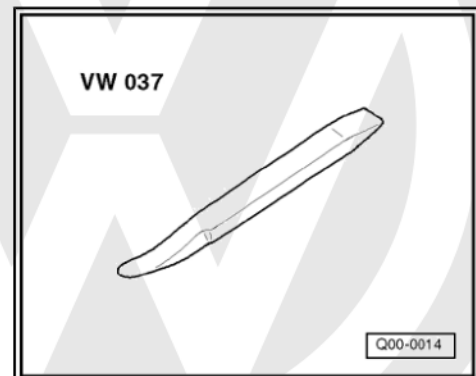


#### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

#### Special tools and workshop equipment required

- ◆ Spatula - VW 037- .



#### 3.1 Luggage compartment lighting switch - F5- - remove and install



#### Note

*The switch is located in the luggage compartment lock, and is only replaced along with the lock.*

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Remove and install the luggage compartment lock ➔ General body repairs, exterior; Rep. gr. 55 ; Lids .





## 3.2 Boot light -W3-

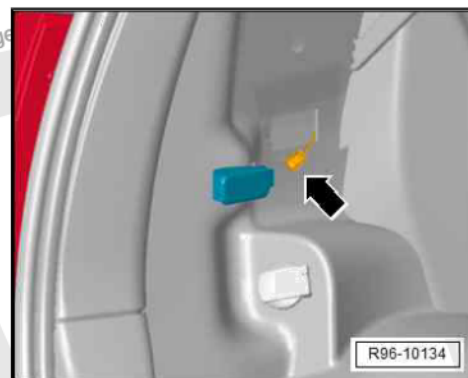
### 3.2.1 Luggage compartment light - W3- (Fox/Crossfox) - remove and install

Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➤ [page 1](#) .
- Carefully remove the luggage compartment light by using a Scraper - VW 037- to make a lever from behind the diffuser lens.
- Disengage the connector -arrow- and remove the luggage compartment lighting.

Installation:

Installation is performed in reverse sequence to the removal.



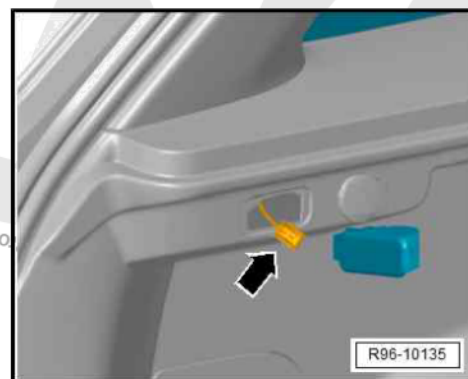
### 3.2.2 Luggage compartment light - W3- (Spacefox/Suran) - remove and install

Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➤ [page 1](#) .
- Carefully remove the luggage compartment light by using a Scraper - VW 037- to make a lever from behind the diffuser lens.
- Disengage the connector -arrow- and remove the luggage compartment lighting.

Installation:

Installation is performed in reverse sequence to the removal.

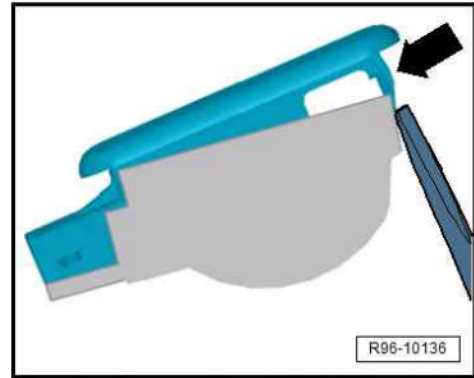


### 3.2.3 Luggage compartment light - W3- - replace lamp

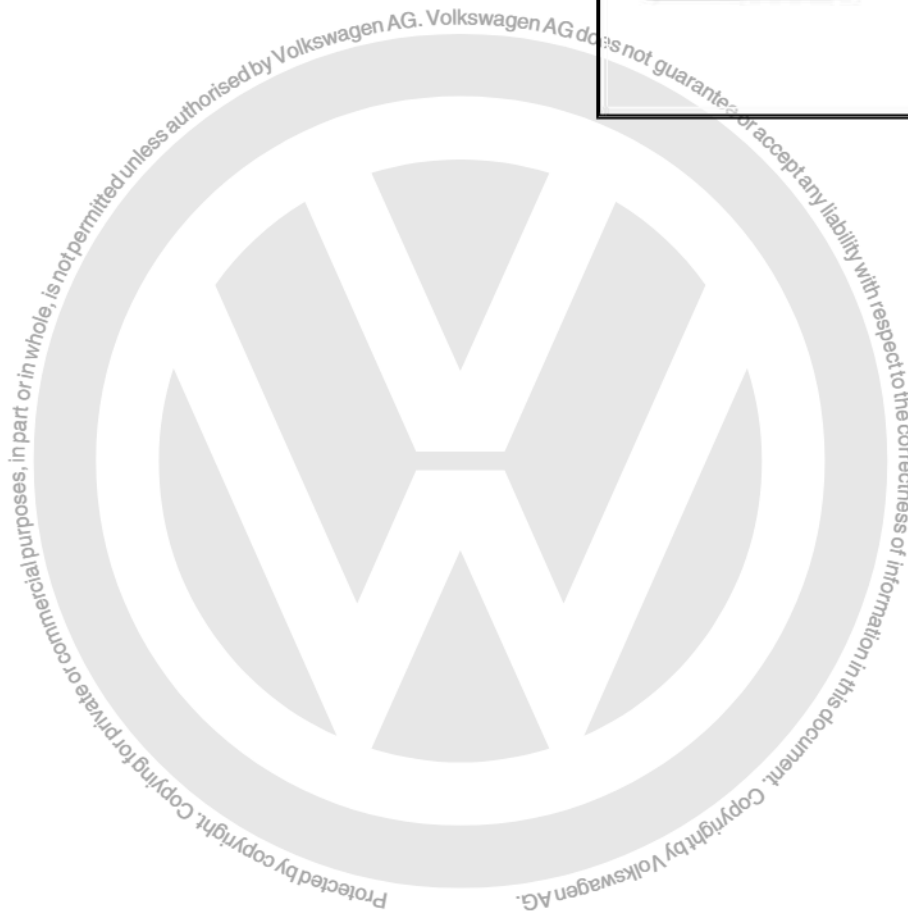
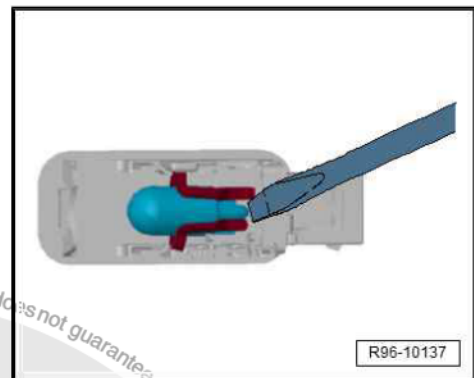
- Turn the ignition and all electric consumers off, and remove the key from the ignition.



- Remove the luggage compartment lighting fixture  
⇒ [page 147](#) .
- Unclip the retaining clip -arrow- with a screwdriver and remove the fixture of the Luggage compartment lighting - W3- .



- Remove the Luggage compartment lighting fixture - W3- with a screwdriver, and remove the lamp -2-.
- Replace the lamp in the Boot lighting - W3- (12V - 5W).





## 4 Roof lining lights and switches



### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ [page 1](#) .*

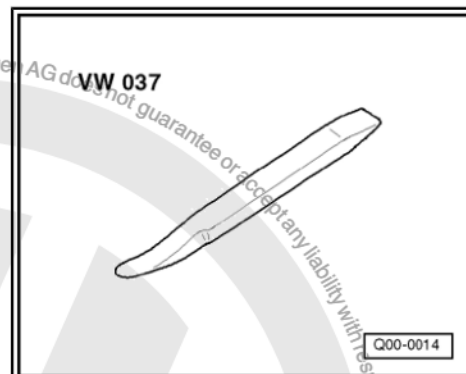


### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

Special tools and workshop equipment required

- ◆ Spatula - VW 037-



### 4.1 Internal front light -W1-



### Note

*To replace the Front interior light. - W1- , remove the internal light diffuser lens only.*

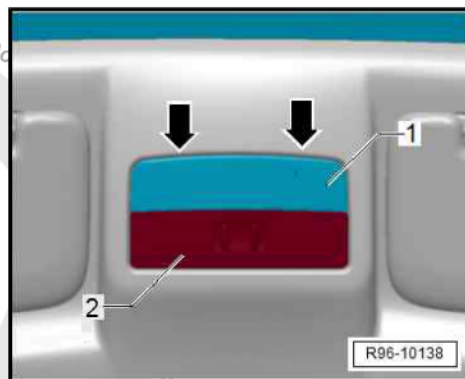
#### 4.1.1 Front interior light - W1- - remove and install

Removal:

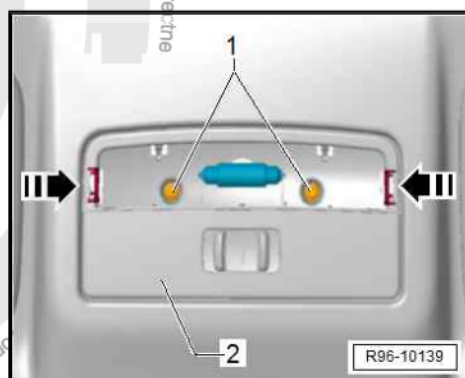
- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .



- Carefully insert the Spatula - VW 037- in the indicated places -arrows- and disengage the diffuser lens -1- by pulling it out of the Front interior light - W1- -2-.



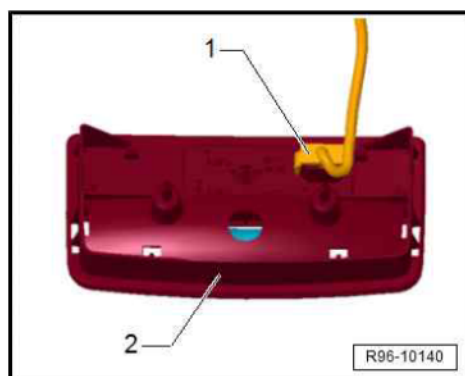
- Loosen the fastening screws -1- and unlock the locks in the direction of movement -arrows- of the Front internal light - W1- -2-.



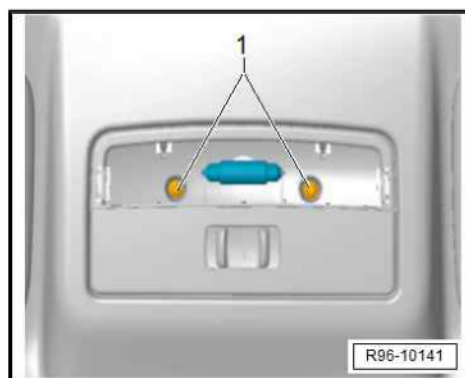
- Disconnect the connector -1- and remove the Front interior light - W1- -2-.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:



- Tighten fastening screws -1- to (1.5 Nm) torque.



### 4.1.2 Front interior light - W1- - replace lamp

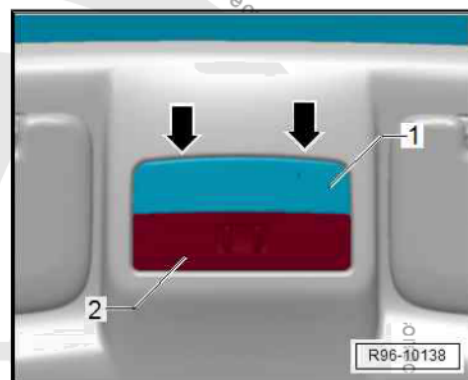


#### Note

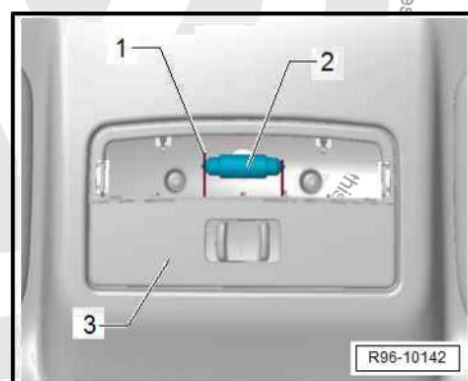
*To replace the Front interior light. - W1- , remove the internal light diffuser lens only.*



- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Carefully insert the Spatula - VW 037- in the location -arrows- and disengage the diffuser lens -1- by pulling it out of the Front interior light - W1- -2-.



- Move the contact blade -1- and remove the lamp (K12V, 10W) -2- from the Front interior light - W1- -3-.
- Install a new light, and check functioning.



## 4.2 Internal front light -W1- with reading light

The Front interior light - W1- comprises the following components:

- ◆ Driver's side reading light - W19- .
- ◆ Front passenger reading light - W13- .
- ◆ Anti-theft alarm system ultrasonic sensor - G209- .



Note

*To replace the Front interior light. - W1- , remove the internal light diffuser lens only.*

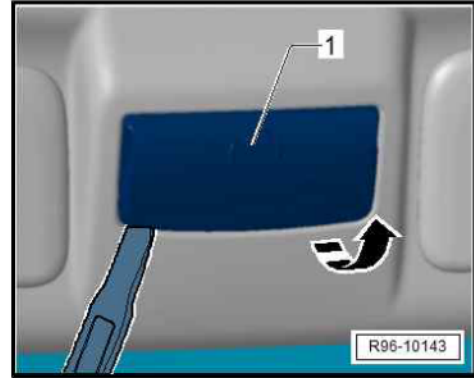
### 4.2.1 Front interior light - W1- with reading light - remove and install

Removal:

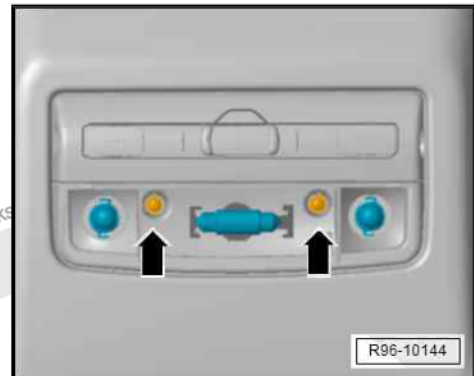
- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .



- Remove light lens -1- towards -arrow- with the Scraper - VW 037- .



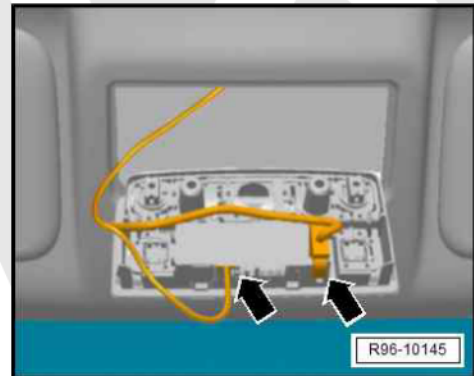
- Loosen and remove fastening screws -arrows- from the internal lighting fixture.



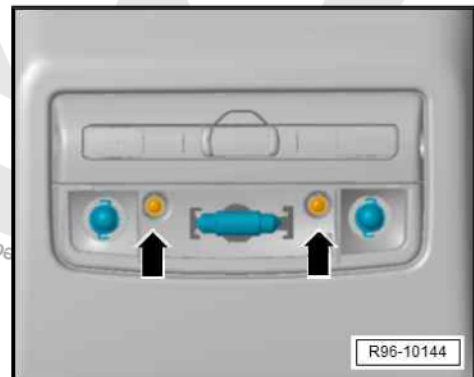
- Release the connectors -arrows- and remove the interior lighting fixture from the roof lining.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:



- Tighten the securing bolts -arrows- to the torque of (1.5 Nm).



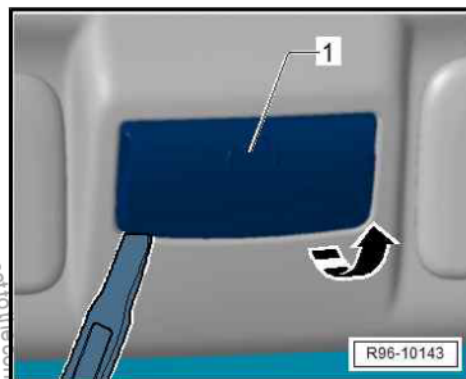
### 4.2.2 Front interior light - W1- with reading light - replace lamp

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .

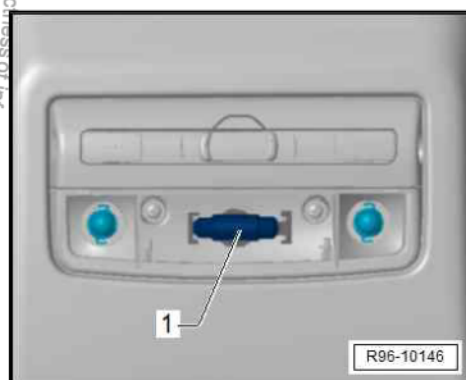




- Remove light lens -1- towards -arrow- with the Scraper - VW 0372.

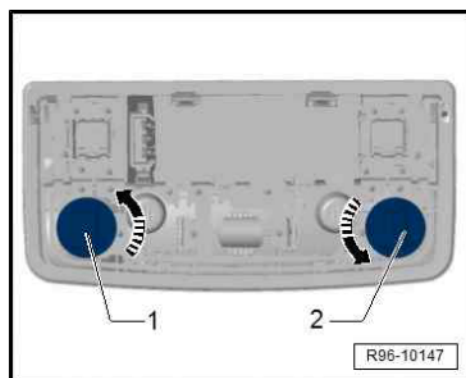


- Replace the lamp -1- (C5W - 12V, 10W).
- Install a new light, and check functioning.

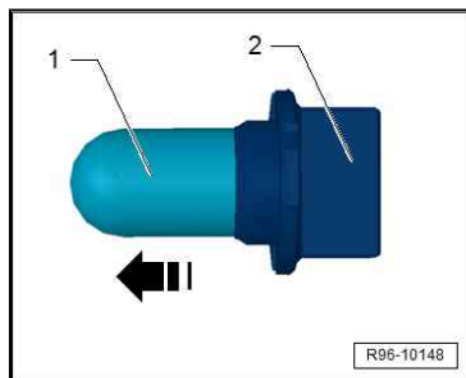


#### 4.2.3 Left centre reading light - W39- and/or Right centre reading light - W40- - replace lamp

- Remove the internal lighting fixture ➔ [page 151](#) .
- Rotate the socket -1- and/or -2- with the Left centre reading light - W39- bulb and/or Right centre reading light - W40- bulb in the direction of the -arrows-.



- Remove lamp-1- (W5W - 12V, 5W) towards -arrow- from the respective socket -2-.
- Replace the lamp (W5W - 12V, 5W).





### 4.3 Internal front light -W1- with sun roof

The Front interior light - W1- comprises the following components:

- ◆ Driver's side reading light - W19- .
- ◆ Front passenger reading light - W13- .
- ◆ Sliding sunroof adjustment regulator - E139- .
- ◆ Anti-theft alarm system ultrasonic sensor - G209- .



#### Note

To replace the Front interior lightbulb - W1- , remove the internal light diffuser lens only.

#### 4.3.1 Front internal light - W1- with sun roof - remove and install



#### Note

When removing and installing visible components (switches, covers, linings, etc.), protect the zones where tools are applied to function as levers.

#### Removal:

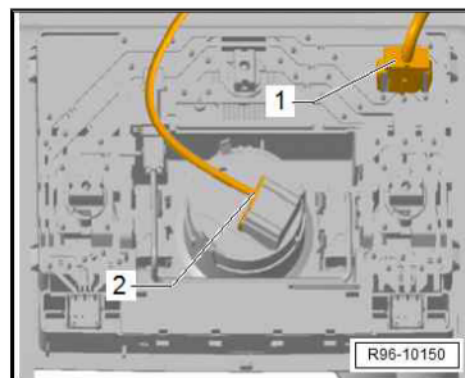
- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Undock the cover -1- and Front internal light - W1--2-, by using the Scraper - VW 037- .



- Disengage the connector -1- from the interior front light - W1- and the connector -2- from the Sliding sunroof adjustment regulator - E139- .

#### Installation:

Installation is performed in reverse sequence to the removal.





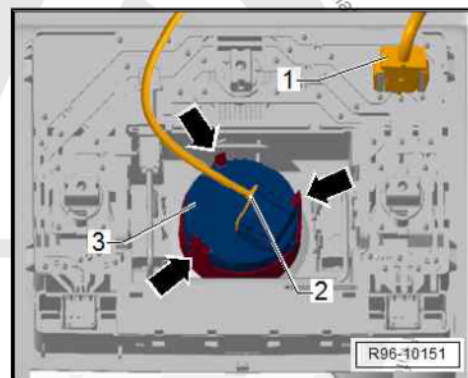
### 4.3.2 Sliding sunroof adjustment regulator - E139- - remove and install

#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Remove the Interior front light - W1- ➔ [page 154](#)
- Disconnect connector -1- and connector -2- of the Sliding sunroof adjustment regulator - E139- .
- Unclip the retaining clips -arrows- and pull the sliding sunroof adjustment regulator - E139- -3- out of its housing.

#### Installation:

Installation is performed in reverse sequence to the removal.



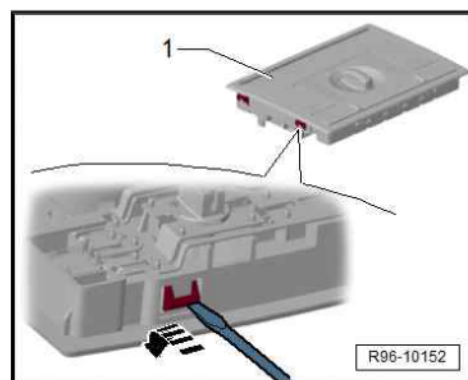
### 4.3.3 Front interior light - W1- with sun roof - replace lamp



#### Note

*When removing and installing visible components (switches, covers, linings, etc.), protect the zones where tools are applied to function as levers.*

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Remove the front interior light - W1- ➔ [page 154](#) .
- Release the diffuser lens -1-, with a screwdriver, by pressing the locks on both sides, according to the detail -arrow-.





- Remove the lamp (C5W - 12V, 10W) -1- from the Front interior light - W1- .
- Install a new light and check that it works properly.



#### 4.3.4 Driver side reading light - W19- and/or Passenger side reading light - W13- - replace the bulbs

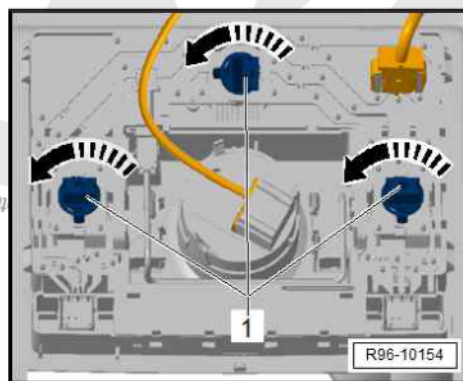
- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Remove the Interior front light - W1- ➔ [page 154](#) .
- Turn the sockets -1- with the reading light bulb in the direction of the -arrow-, and remove them from the Front interior light - W1- assembly.



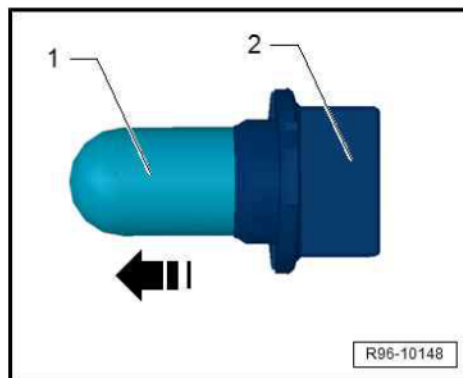
Note

*The quantity of supports varies depending on the version.*

Reading light at driver/passenger side with sunroof - replace the lamps



- Remove the bulb-1- (W5W - 12V, 5W) as indicated -arrow- from the respective socket -2-.
- Replace the lamp (W5W - 12V, 5W).
- Install a new light, and check functioning.



#### 4.4 Make-up mirror lighting - remove and install



Note

- ♦ *When removing and installing visible components (switches, covers, linings, etc.), protect the zones where tools are applied to function as levers.*
- ♦ *Disassembling/assembling of both lamps is identical; the description refers to only one side.*

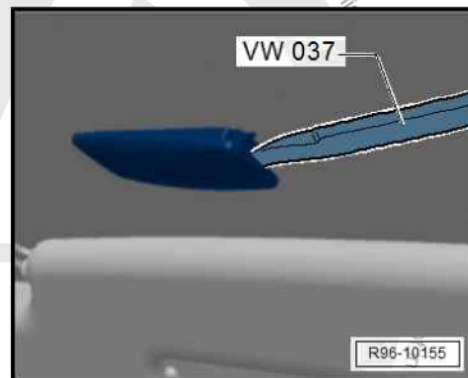


#### Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➤ [page 1](#) .
- Raise the lighting fixture carefully with a Spatula - VW 037- or a screwdriver and remove it from the roof lining.
- Disengage the connector.
- Remove the lighting fixture from the make-up mirror.

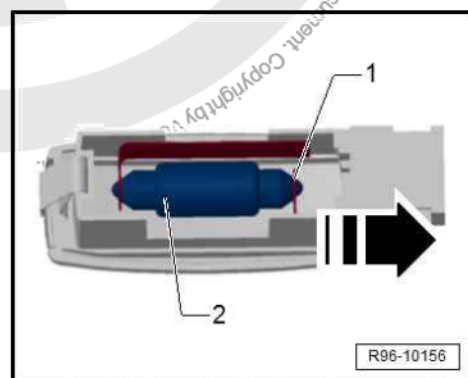
#### Installation:

Installation is performed in reverse sequence to the removal.



#### 4.4.1 Vanity mirror light bulb - L31- - replace

- Remove the lighting fixture from the make-up mirror ➤ [page 156](#) .
- Move the contact blade -1- as indicated by the -arrow- and remove the vanity mirror light bulb - L31- -2- from the housing.
- Replace the vanity mirror light bulb - L31- -2- (12V - 5W).



#### 4.5 Rear reading light -W11- and/or -W12- - remove e install

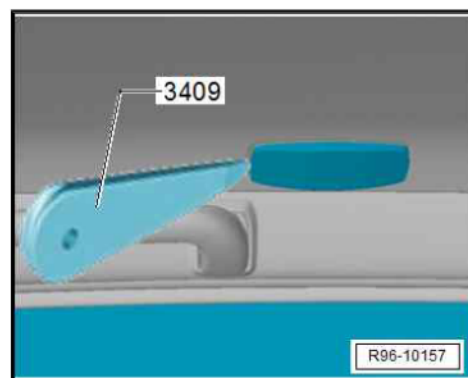
##### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➤ [page 1](#) .
- Carefully undock the Left rear reading light - W11- and/or Right rear reading light - W12- using the Nylon wedge - 3409- or spatula - VW 037- .
- Disconnect its respective connector.

##### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- After installation, check for proper function of the Left rear reading light - W11- and/or Right rear reading light - W12- .

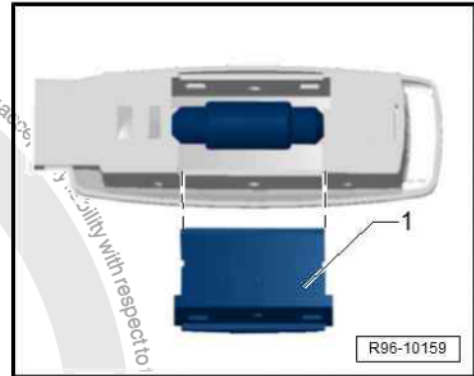




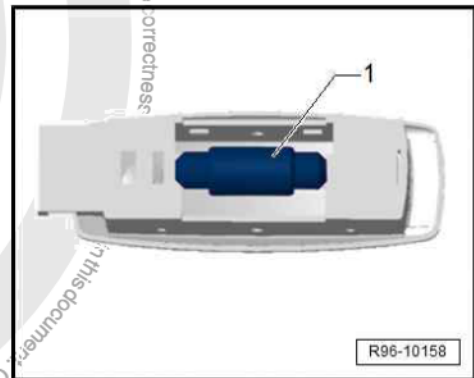


#### 4.5.1 Left rear reading light - W11- and/or Right rear reading light - W12- - replace bulb

- Remove the Left rear reading light - W11- and/or Right rear reading light - W12- ➔ [page 157](#) .
- Remove the rear cover -1- by sliding in the direction shown.



- Remove the bulb -1- by carefully moving the contact blade.
- Replacing the lamp.







## 5 Horns



### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ page 1 .*



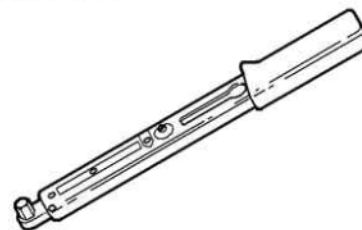
### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A- .*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A- , earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

Special tools and workshop equipment required

- ◆ Torque wrench - 5 to 50 Nm (fit. 1/2") - VAG 1331-

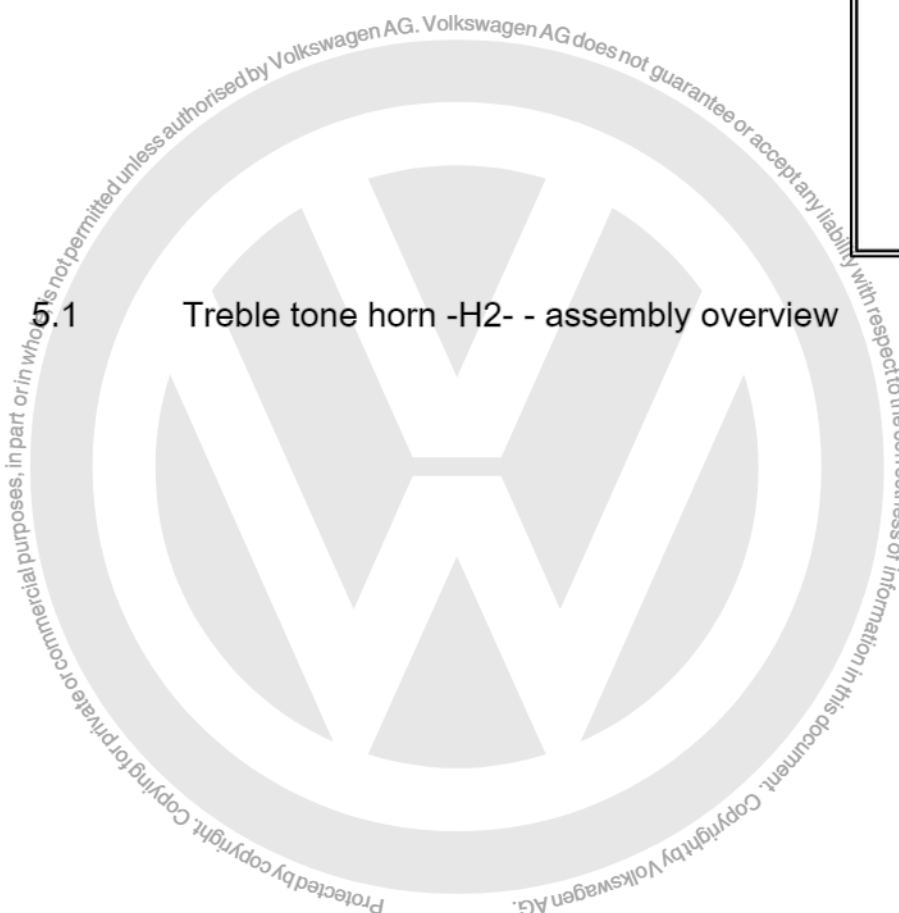
V.A.G 1331



Q00-10065

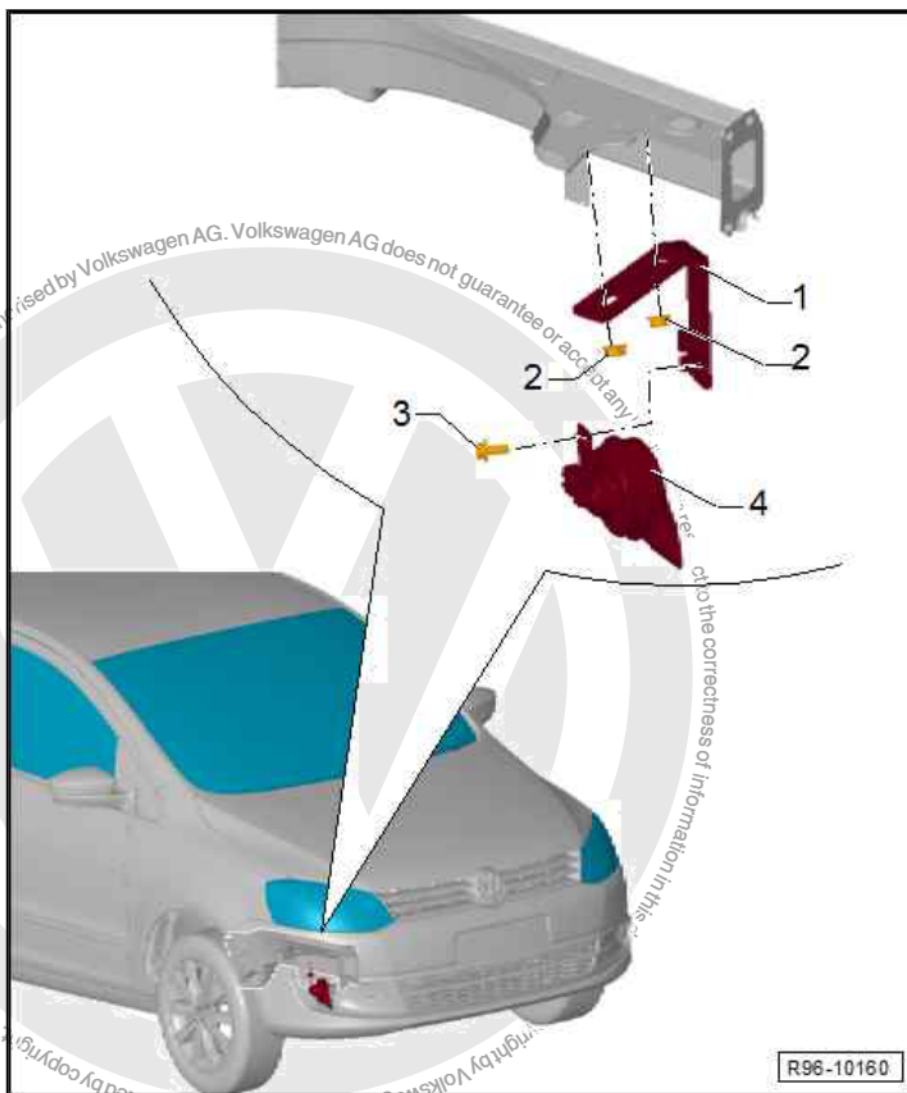
### 5.1

### Treble tone horn -H2- - assembly overview





- 1 - Fastening support
- 2 - Hexagonal nuts
  - $11 \pm 2$  Nm.
- 3 - Bolt
  - $15 \pm 2$  Nm.
- 4 - Treble tone horn - H2-
  - Remove and install  
⇒ [page 160](#) .



### 5.1.1 Treble tone horn - H2- - remove and install

#### Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ⇒ [page 1](#) .

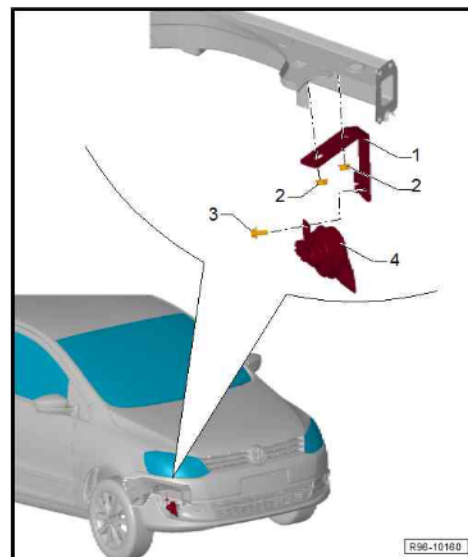


- Disengage the Treble tone horn - H2- connector -4-.
- Loosen fastening nuts -2- and remove Treble tone horn - H2- with its support.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Tighten the securing nuts -2- to a  $(11 \pm 2 \text{ Nm})$  torque.



## 5.2 Horn plate -H-

The horn activation occurs through the plastic cover located in the centre of the steering wheel. Depending on the equipment, the horn activation devices integrated to the steering wheel or to the Igniter for driver's airbag - N95- cannot be replaced individually:

In vehicles with airbag, replace the Igniter for driver's airbag - N95-  
⇒ Body - Internal assembly works; Rep. gr. 69 ; Passenger protection .

On vehicles without airbag, replace the Horn plate - H- ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering .



## 6 Immobilizer

### 6.1 Immobilizer control unit -J362- - replace

The Immobilizer control unit - J362- -J362- is integrated to the Combined instrument - K- . If the Immobilizer control unit - J362- is damaged, it is necessary to replace the entire Combined instrument - K- .

- Replace the Combined instrument - K- ➔ [page 43](#) .

### 6.2 Immobilizer reading coil -D2- - remove and install

The Immobilizer reading coil - D2- is installed in the key cylinder, and cannot be replaced individually.

- If the Immobilizer reading coil - D2- is damaged, the key cylinder must be replaced ➔ [page 126](#) .

### 6.3 Ignition key - variable code transponder



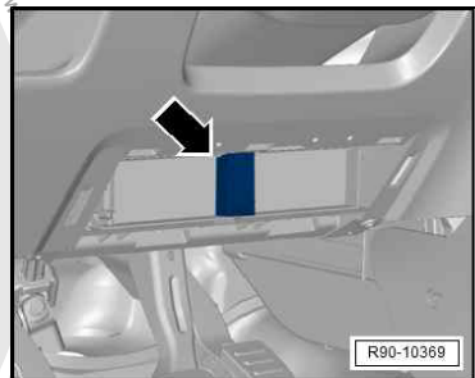
#### Note

- ♦ *It is not possible to replace the variable code transponder from the ignition key.*
- ♦ *If the variable code transponder is damaged, the ignition key must be replaced.*
- ♦ *In case of replacing an ignition key or if an additional key is necessary, always adapt the new ignition key to the immobilizer ➔ [page 162](#) .*

### 6.4 Ignition key - adapt to immobilizer

To adapt of the ignition key to the immobilizer, you must use the Vehicle diagnosis system and Technical information - VAS 5052A- or further equipment.

- Connect the Vehicle diagnosis and technical information system - VAS 5052A- or later equipment ➔ General Information; Rep. gr. 97 ; Cables and wire harnesses in the 16-pin diagnose connector - T16- -arrow-.
- Turn the ignition on.
- Turn off all electrical equipment.
- Continue by selecting the desired functions ➔ Vehicle diagnostic tester.



### 6.5 Ignition key - replace battery

Replacing the battery on the ignition key with remote command ➔ General body repairs, exterior; Rep. gr. 57 ; Front doors/ components/ central lock .



## 7 Alarm System

General description:

The anti-theft alarm system functions are integrated to the Central control unit for convenience system - J393- .

When the Central control unit for the convenience system - J393- is damaged or defective, replace it ⇒ General body repairs, exterior; Rep. gr. 57 ; Front doors/ components/ central lock .

It is crucial to know how the alarm systems operate and are handled ⇒ Vehicle's instruction manual .

The anti-theft alarm system is equipped with self-diagnosis, which facilitates troubleshooting ⇒ [page 163](#) .

### 7.1 Locating defects and indicating faults

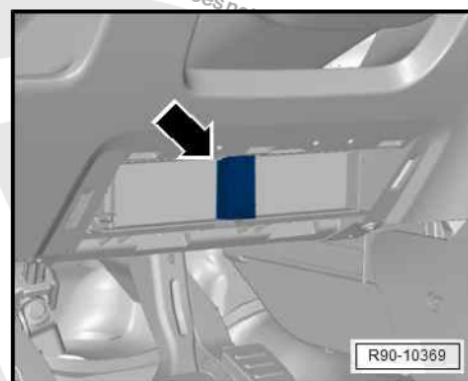
To localize faults, you must use the Vehicle diagnosis system and technical information - VAS 5052A- or further equipment.

- Connect the Vehicle diagnosis and technical information system - VAS 5052A- or later equipment ⇒ General information; Rep. gr. 97 ; Cables and wire harnesses in the 16-pin diagnose connector - T16- -arrow-.
- Turn the ignition on.
- Turn off all electrical equipment.
- Continue by selecting the desired functions ⇒ Vehicle diagnostic tester.



Note

*After triggering the anti-theft alarm system, it is possible to check for the alarm source memorized in the Central control unit for the convenience system - J393- .*



### 7.2 Anti-theft alarm system - activate and deactivate

Activate the anti-theft alarm system:

The anti-theft alarm system turns on automatically when the vehicle is locked.



Note

*Before locking the vehicle, you must close completely all windows and doors, in order to prevent unnecessary alarm triggering. However, this is not necessary in vehicles with one-touch closing.*

Deactivate the anti-theft alarm system through the manual command:

- ◆ The anti-theft alarm system deactivates if the vehicle is unlocked through activation of the unlocking key, or when the ignition is turned on.

Open the vehicle with key (emergency opening):

- ◆ Turn the key in the driver's door lock to the opening position.
- ◆ Open only the driver's door.





Note

*Therefore, you must not open any other door, bonnet or rear lid; otherwise, the alarm will be triggered.*

However, the anti-theft alarm system remains activated, but there is no alarm triggering.

- Turn the ignition on within 15 seconds.

After 15 seconds, the alarm will be triggered if the ignition is not turned on.

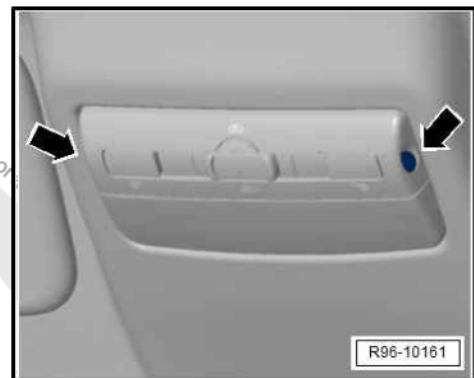
When the ignition is turned on, the electronic system recognizes the valid ignition key and deactivates the anti-theft alarm system.

### 7.3 Ultra-sound sensor for alarm system - G209- - remove and install

#### 7.3.1 Vehicles with Front interior light - W1- with reading light - remove and install

The Ultra-sound sensor for alarm system - G209- is comprised of 2 individual sensors -arrows- , cables and a command element in the rear section of the interior front light, and cannot be replaced individually. The Ultra-sound sensor for the alarm system - G209- must only be replaced together with the complete assembly.

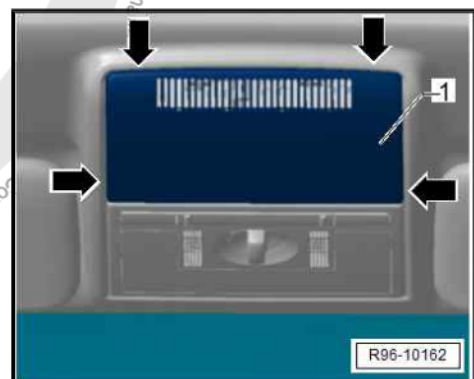
- Remove and install the interior front light ⇒ [page 151](#) .



#### 7.3.2 Vehicles with Front interior light - W1- with sun roof - remove and install

Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ⇒ [page 1](#) .
- Disengage cover -1- with Scraper - VW 037- from the respective fittings -arrows-.





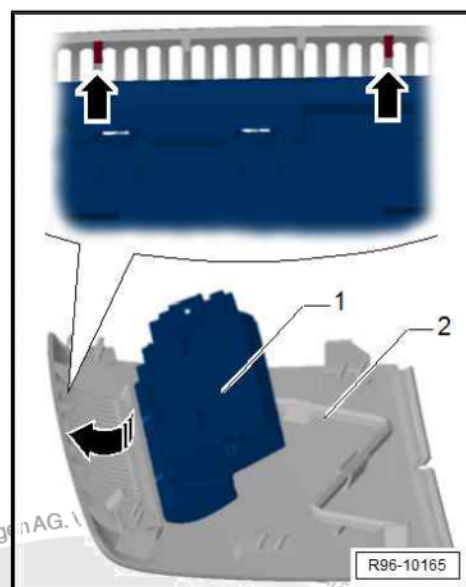
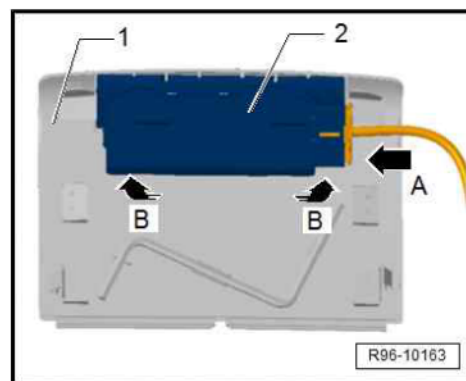


- Disconnect the connector -arrow A- from the Ultra-sound sensor of the anti-theft alarm system - G209- -2-.
- Move the Ultrasound sensor of the anti-theft alarm system - G209- assembly -2- as indicated by -arrow B- and remove it from the trim -1-.

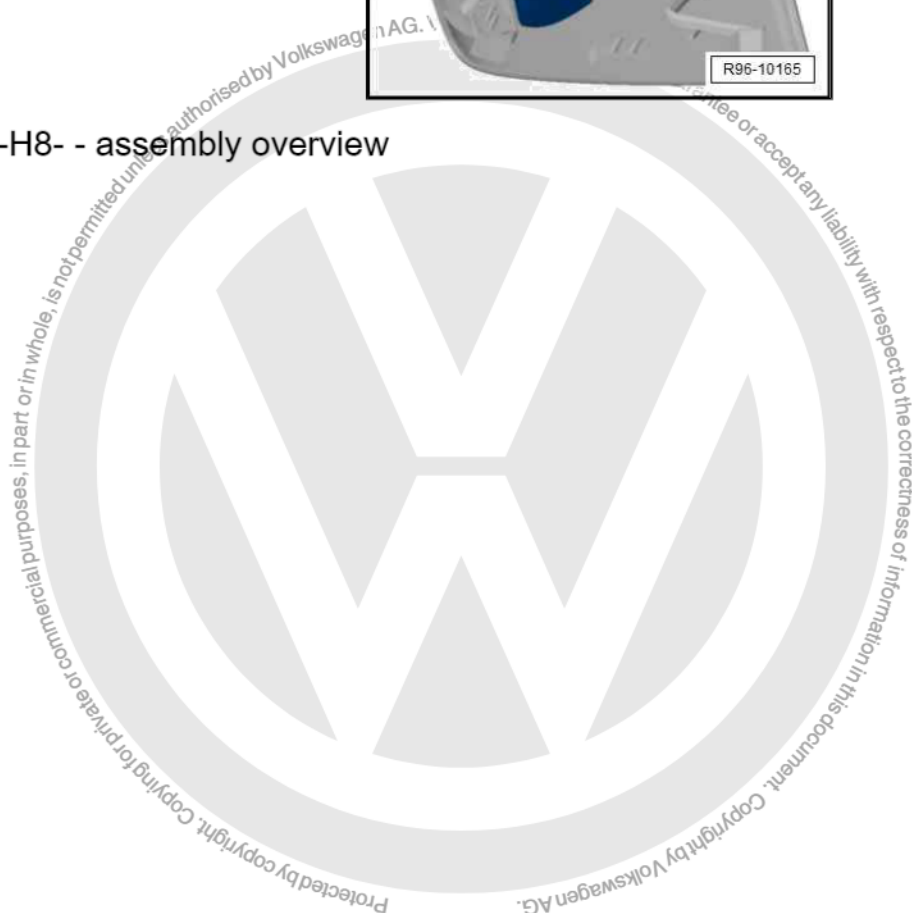
Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Install the Ultra-sound sensor of the anti-theft alarm system - G209- assembly -1- onto cover -2- according to the -arrow-, by clipping it in -arrows-.



## 7.4 Alarm system horn -H8- - assembly overview



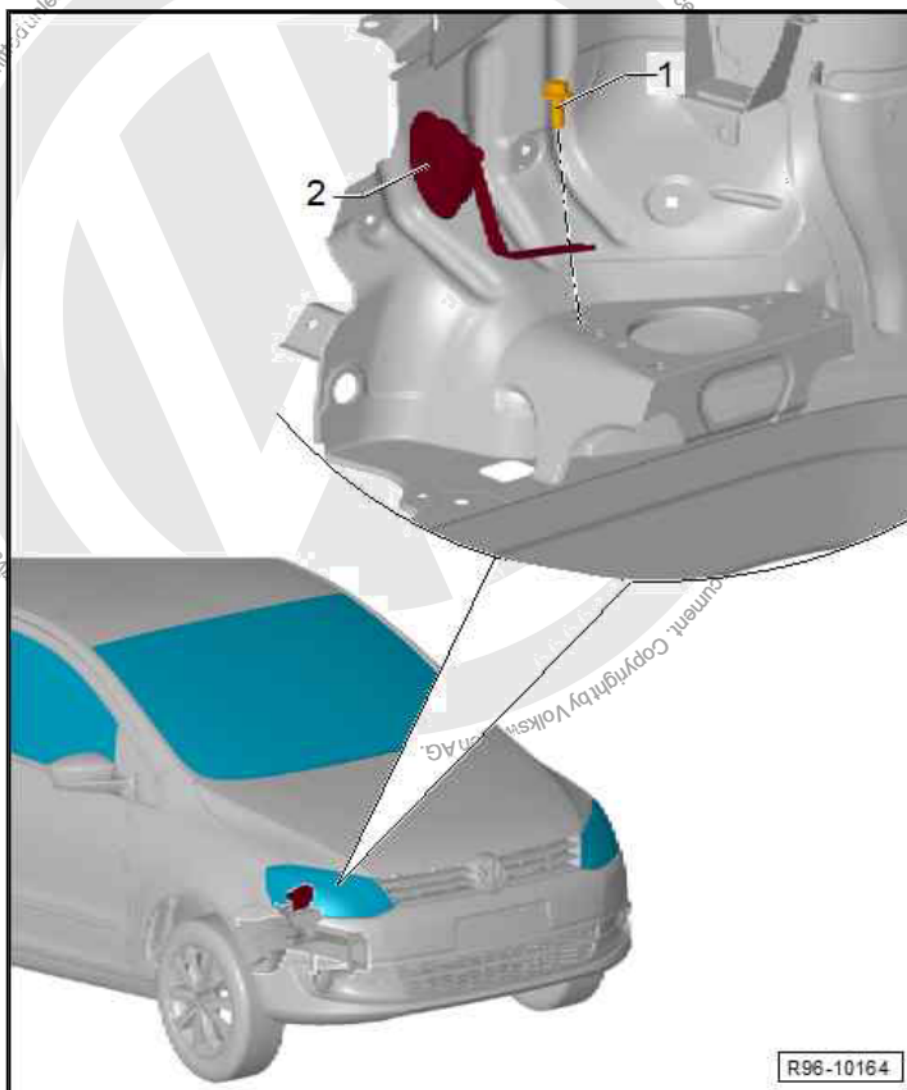


1 - Bolt

- ☐ 20 Nm.

2 - Alarm system horn - H8-

- ☐ For vehicles with power steering.
- ☐ Remove and install  
⇒ [page 166](#) .



#### 7.4.1 Alarm system horn - H8- - remove and install

Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ⇒ [page 1](#) .

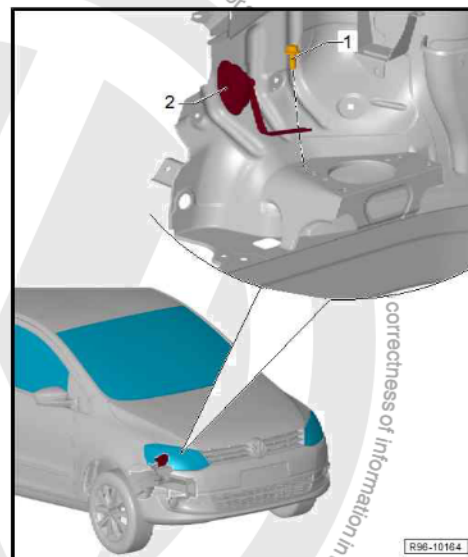


- Disconnect the Alarm system horn - H8- connector.
- Loosen the fastening screw -1- (20 Nm) and remove the Alarm system horn - H8- -2-.

**Installation:**

Installation is performed in reverse sequence to that of removal, observing the following:

- Screw on the fastening screw -1- with torque of (20 Nm).





## 97 – Wiring

### 1 Fuse and relay support



#### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ [page 1](#).*



#### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A-.*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A-, earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

#### 1.1 Fuse and relay support - remove and install

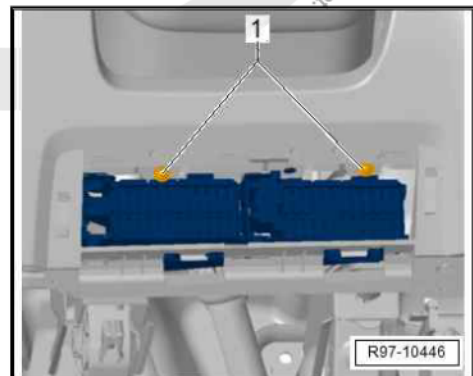
##### Removal:

- Turn the ignition and all electric consumers off, and remove the key from the ignition.
- Disconnect the Battery - A- ➔ [page 1](#)
- Remove the screws -1- that fasten the fuse support to the panel.
- Remove the support by pushing it into the panel.

##### Installation:

Installation is performed in reverse sequence to the removal.

- Tighten fastening screws to a torque of (3.5 Nm).





## 2 Coupling stations and engine compartment bellows lid



### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ page 1.*



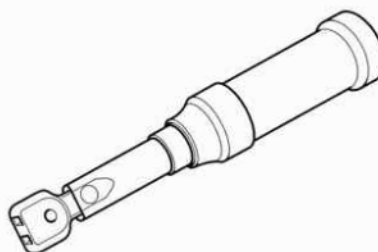
### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A-.*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A-, earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

Special tools and workshop equipment required

- ◆ Torque wrench 2 to 10 Nm - VAG 1783-

**V.A.G 1783**



Q00-10085

### 2.1 Coupling station on A-pillar - assembly overview

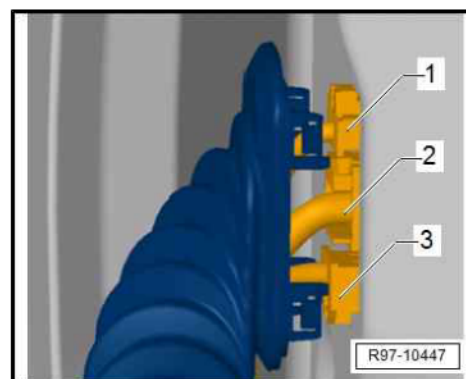


### Note

*Replace whenever removed from body.*

The coupling station is located near the upper door hinge on the A-pillar.

- 1 - Speaker and mirror.
- 2 - Mirror and glass.
- 3 - Locking and glass.



R97-10447



## 2.2 Coupling station on B-pillar - assembly overview

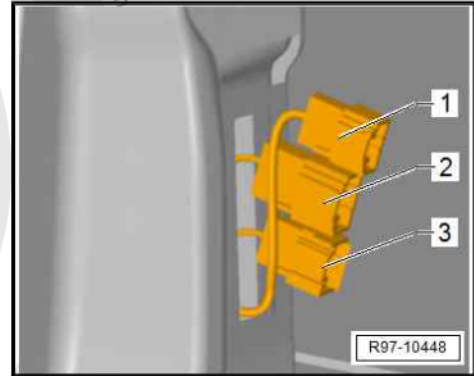


### Note

Replace whenever removed from body.

The coupling station is located near the upper door hinge on the B-pillar.

- 1 - Voltage supply to loudspeaker
- 2 - Door contact, alert lights
- 3 - Central locking



## 2.3 Boot cover on engine compartment partition panel - remove and install

### General description:

Coupling station on engine compartment partition panel interconnects electric central in cabin with engine compartment. It is located at the left side behind the dashboard, and behind the windscreen wiper motor.

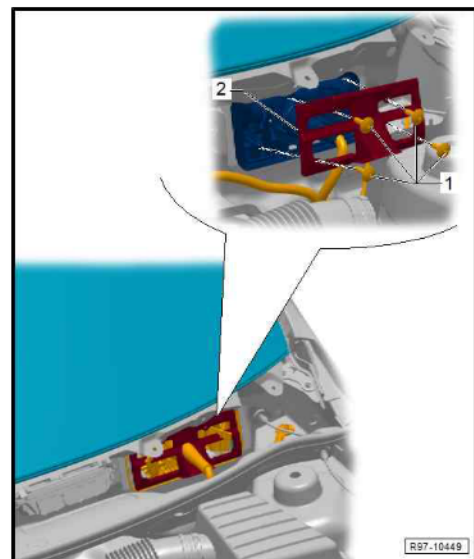
### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ➔ [page 1](#) .
- Remove the windscreen wiper mechanism ➔ [page 69](#) .
- Remove fastening bolts -1- and remove boot cover -2-.

### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Tighten fastening screws -1- to (3.5 Nm) torque.







### 3 Fuse box



#### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ⇒ [page 1](#).*



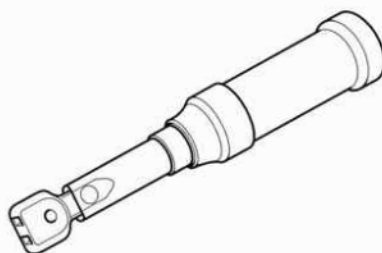
#### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A-.*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A-, earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

#### Special tools and workshop equipment required

- ◆ Torque wrench 2 to 10 Nm - VAG 1783-

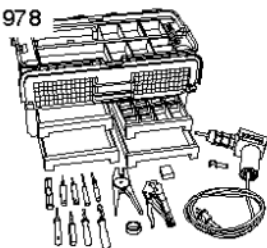
V.A.G 1783



Q00-10085

- ◆ Harness repair set - VAS 1978-

VAS 1978



W00-0447

#### 3.1 Fuse box - remove and install



#### Note

*The fuse box is located over the Battery - A- in the engine compartment.*

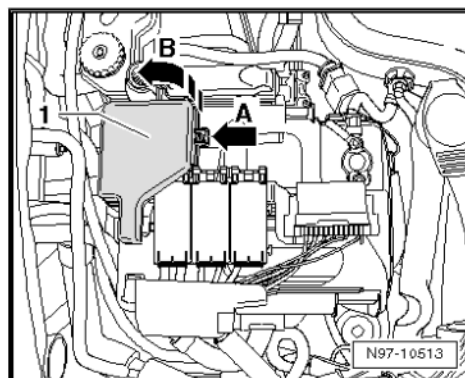


### 3.1.1 Main fuse holder (Version 1) - remove and install

#### Removal:

Turn the ignition and all electric consumers off, and remove the key from the ignition.

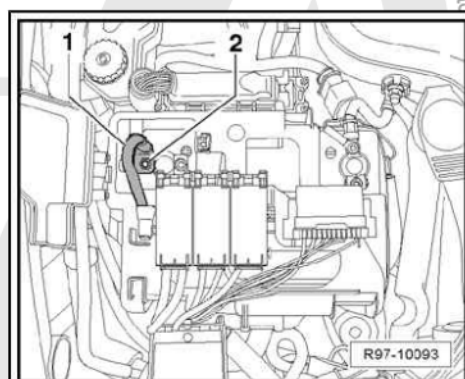
- Disconnect the Battery - A- ➔ [page 1](#) .
- Unclip -arrow A- the positive Battery - A- pole cover -1- and move the cover -1- as shown by -arrow B-.
- Release the locks -arrows A- of the cover -1-.



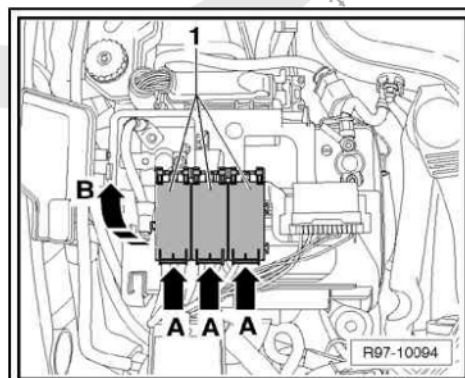
- Tilt the cover -1- towards -arrow B-.



- Release the securing nut -2- and remove the cable (B+) -1-.

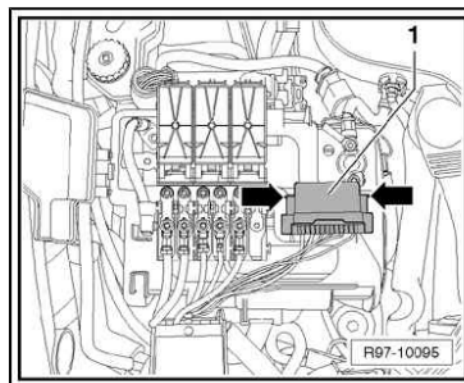


- Unlock -arrows A- the fuse covers -1- and lift them towards - arrow B-.

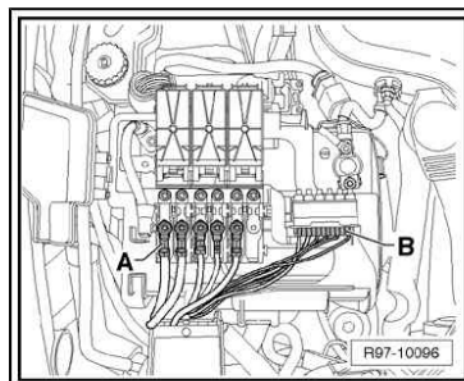




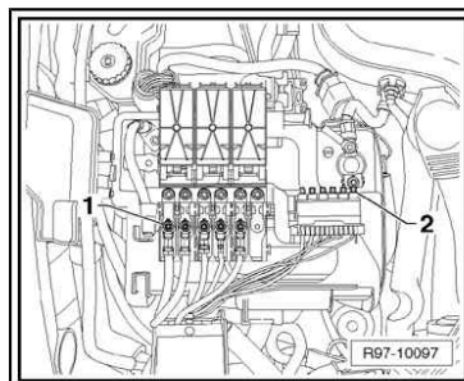
- Release the fastening locks -arrows- and remove the cover -1-.



- Identify the pinout of cable terminals -A- with cable terminals-B-.



- Remove the fastening nuts -1- and remove the fuses -2-.

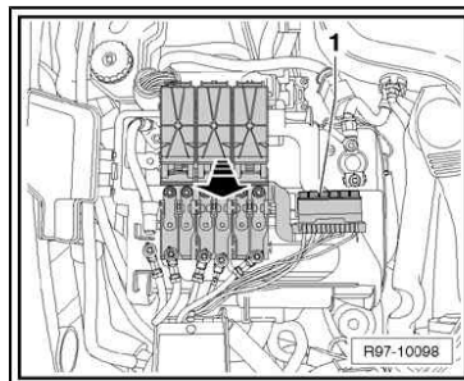


- Unlock the fuse holder -1- by moving it towards the -arrow-.
- Remove the cable contacts with the tool indicated in the Harness repair set - VAS 1978- .
- Remove the fuse box.

#### Installation:

Installation is performed in reverse sequence to that of removal, observing the following:

- Ensure the correct pinout and mounting of all cables to be connected.
- Tighten the fastening nuts with  $(6 \pm 1 \text{ Nm})$  torque.
- Mount fuses according to the electric diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

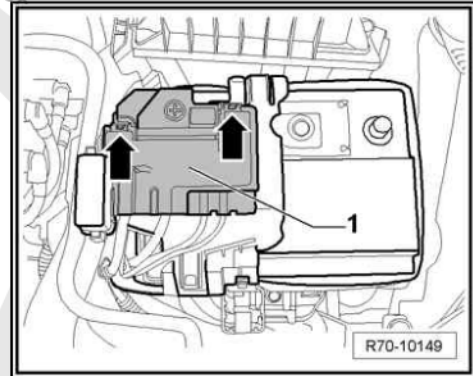




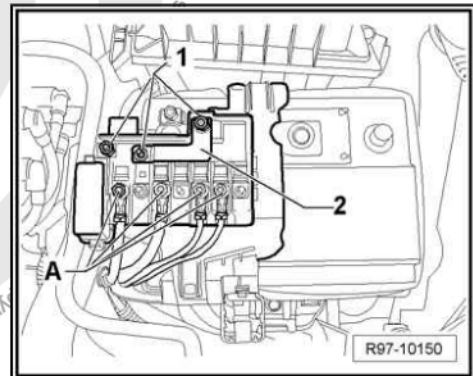
### 3.1.2 Main fuse holder (version 2) - remove and install

#### Removal:

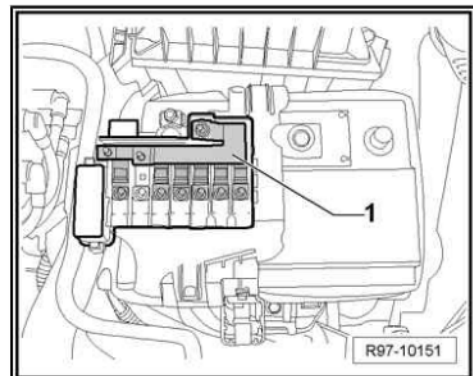
- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ⇒ [page 1](#) .
- Remove cover -1- with the aid of a screwdriver, unlocking the locks located at the -arrows-.
- Identify the position of the terminals for the -A- cables and remove them.



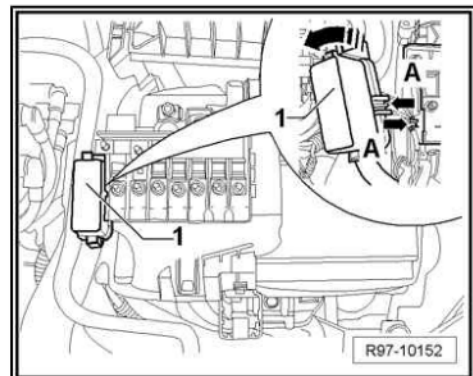
- Remove the securing nuts -1- and the reinforcement -2-.



- Remove multiple fuse -1-.



- Remove side fuse housing -1-, detaching the locks according to -A arrows-, pulling it up.







- Loosen the locks towards the -arrows- of support -1-.

#### Installation:

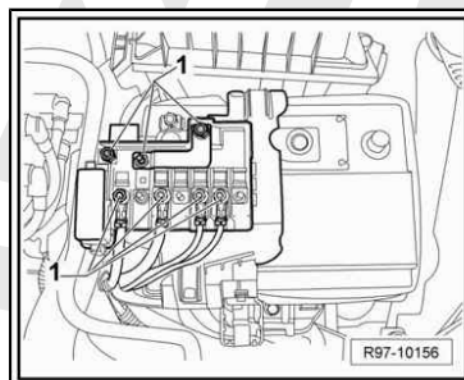
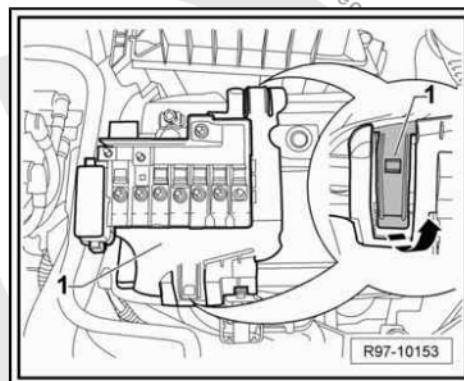
Installation is performed in the reverse sequence to the removal, observing the following



#### Note

- ◆ *It is imperative that all conductors/terminals are installed back into their respective locations.*
- ◆ *Mount the fuses according to the Electrical Diagram  $\Rightarrow$  Current flow diagrams, Electrical fault finding and Fitting locations.*

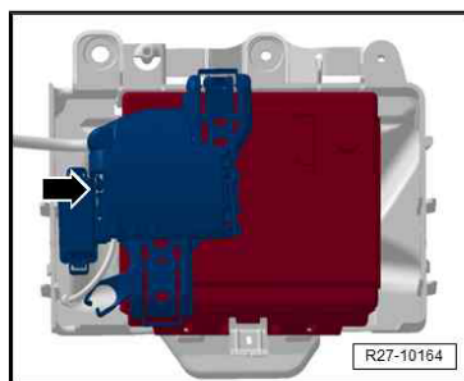
- Tighten the securing nuts -1- to a  $(9 \pm 1 \text{ Nm})$  torque.



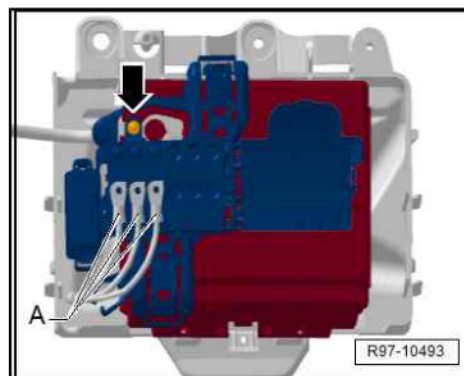
### 3.1.3 Main fuse holder (version 3) - remove and install

#### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Press the retaining clip -arrow- and tilt the positive Battery - A- pole cover to the right.
- Identify the position of the terminals for the -A- cables and remove them.
- Remove the fuses.



- Remove the fastening nut -arrow-.





- Loosen the locks towards the -arrows- support.

#### Installation:

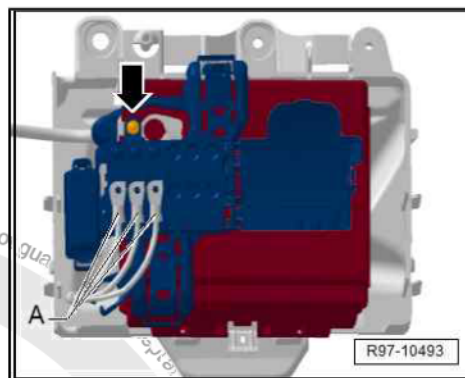
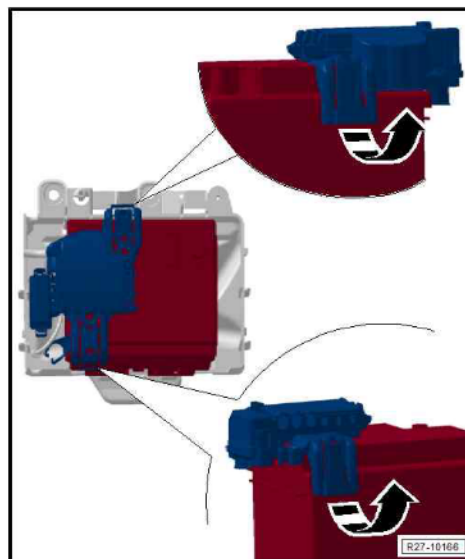
Installation is performed in the reverse sequence to the removal, observing the following



#### Note

- ◆ *It is imperative that all conductors/terminals are installed back into their respective locations.*
- ◆ *Mount the fuses according to the Electrical Diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

- Tighten the fastening nut -1- and the nuts on the cable terminals with a torque of (6 Nm).







## 4 Control units



### WARNING

*Before carrying out any work in the electrical system, it is necessary to disconnect the earth wire of the Battery - A- ➔ page 1.*



### Note

- ◆ *Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery - A-.*
- ◆ *The conditions to ensure safe electrical system activities are provided after disconnecting the Battery - A- (current interruption).*
- ◆ *When the Battery - A-, earth strap is reconnected, check vehicle equipment (radio, clock, central locking, electric windows, etc.) according to the repair manual and/or instructions for use.*

### Special tools and workshop equipment required

- ◆ Diagnostic, testing and information system - VAS 5052A- or later equipment.
- ◆ Vehicle diagnosis system and technical information - VAS 6150-

- ◆ Wireless diagnostic connector - VAS 5054A-

**VAS 6150**



Q00-10126

**VAS 5054 A**



Q00-10127

### 4.1 Central control unit for the convenience system -J393-

The Central control unit for the convenience system - J393- is located beneath the dashboard, at the driver's side, above the



accelerator pedal (in vehicles with right steering wheel, above the clutch pedal).

#### General description:

The Central control unit for the convenience system - J393- is in charge of the main vehicle functions:

- ◆ Power window drive control
- ◆ Power window drive convenience control
- ◆ Vehicle self-locking control at 15 km/h
- ◆ Self-unlocking control when removing key from ignition
- ◆ Specific adjusting control in function of the country for the alarm system
- ◆ Radio frequency receiver of remote command
- ◆ Sound signal control when locking and unlocking the vehicle
- ◆ Light signal control when locking and unlocking the vehicle
- ◆ Internal cabin lighting control
- ◆ Internal cabin pressure relief control

When the convenience system central control unit - J393- is damaged or defective, it must be replaced ⇒ General body repairs, exterior; Rep. gr. 57 ; Front doors/ components/ central lock .



#### Note

- ◆ *After installing the new Central control unit for convenience system - J393- , it is necessary to perform its coding and the remote control adaptation.*
- ◆ *For coding and adjustment, use the System diagnostic vehicular and Technical Information - VAS 5052A- or further equipment ⇒ General information; Rep. gr. 97 ; Cables and harnesses .*

## 4.2 Control unit of lights with windscreen wiper functions -J917- (Coming Home/ Leaving Home)

The Control unit of lights with windscreen wiper functions - J917- is located behind relay holder.

#### General description:

The Control unit of lights with windscreen wiper functions - J917- is responsible for the following vehicle function:

- ◆ External lighting control

#### Locating defects and indicating faults:

The Control unit of lights with windscreen wiper functions - J917- is provided with self-diagnosis function.

To localize faults, you must use the Vehicle diagnosis system and technical information - VAS 5052A- or further equipment.

- Connect the Vehicle diagnosis and technical information system - VAS 5052A- or later equipment ⇒ General Information; Rep. gr. 97 ; Cables and wire harnesses in the 16-pin diagnose connector - T16- .



#### 4.2.1 Control unit of lights with windscreen wiper functions - J917- (Coming Home/Leaving Home) - assembly overview

##### 1 - Dashboard

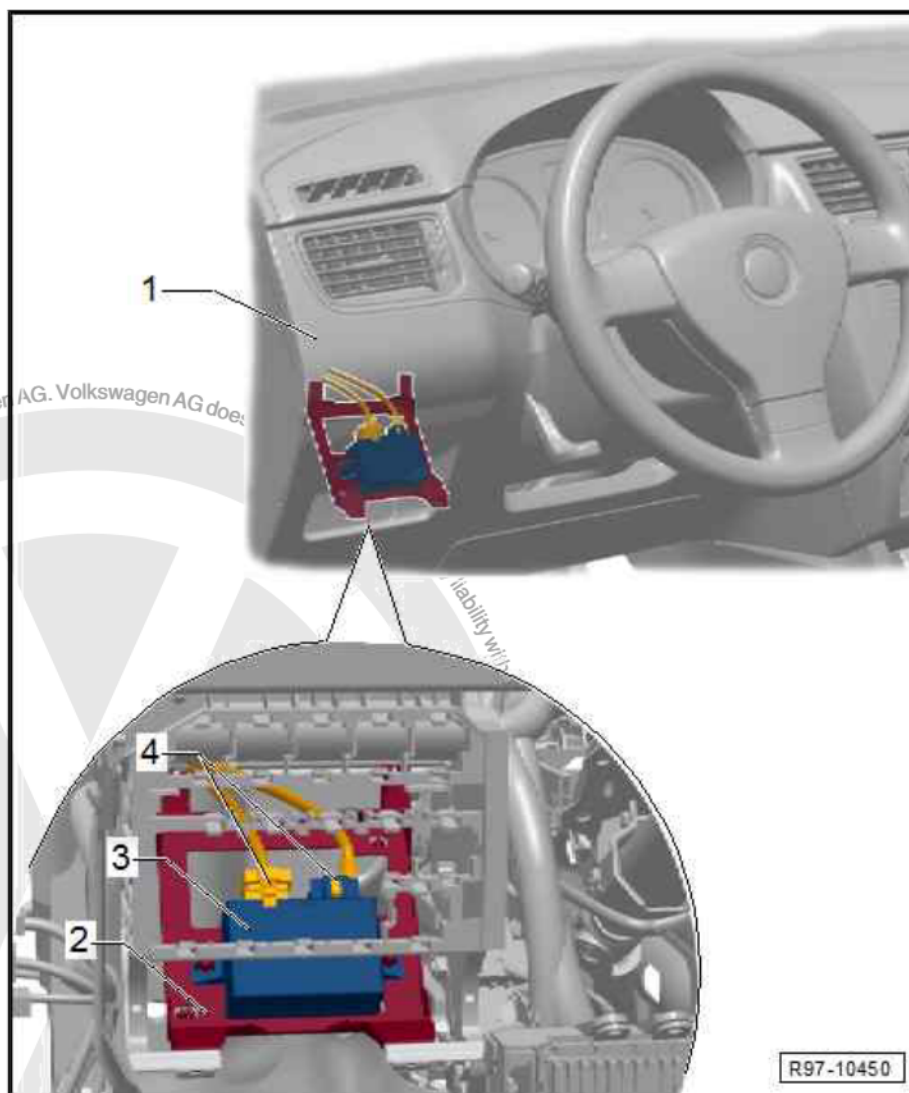
- ☐ Remove and install ⇒  
Body - Internal assembly works; Rep. gr. 70 ;  
Lining / insulation .

##### 2 - Mounting bracket

##### 3 - Control unit of lights with windscreen wiper functions - J917- (Coming Home/Leaving Home)

- ☐ Remove and install  
⇒ [page 179](#) .

##### 4 - Connectors



#### 4.2.2 Control unit of lights with windscreen wiper functions - J917- (Coming Home/Leaving Home) - remove and install

##### Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ⇒ [page 1](#) .



- Loosen support -2- from Control unit of lights with windscreen washer function - J917- -3- behind dashboard -1-.
- Disconnect connectors -4- .
- Remove the Control unit of lights with windscreen wiper functions - J917- -1-.

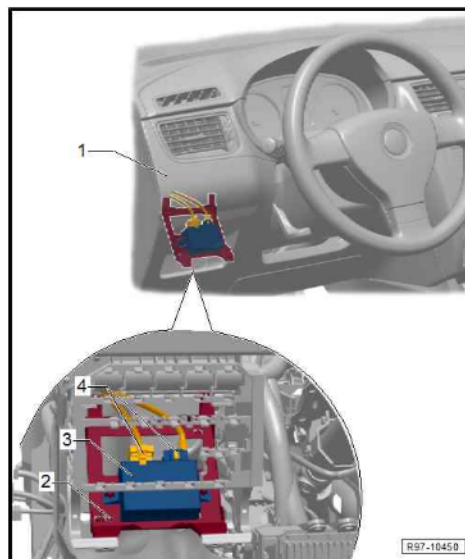
Installation:

- Install in reverse order to the removal



#### Note

- ◆ After installing the new Control unit of lights with windscreen wiper functions - J917- , perform its coding
- ◆ For coding, using System diagnostic vehicular and Technical Information - VAS 5052A- or further equipment ⇒ General information; Rep. gr. 97 ; Cables and harnesses



### 4.3 Central control unit for window activation -J1015- (ZFH)

Centre control unit to glass control - J1015- is located beneath the instrument cluster in the driver's side, and above the accelerator pedal.

- Remove and install ⇒ General body repairs, exterior; Rep. gr. 57 ; Front doors / components / central lock .

### 4.4 Control unit for the on-board system - J519- (BFM)

Control unit to on-board electrical system - J519- located behind the relay support.

Locating defects and indicating faults:

Control unit to on-board electrical system - J519- is equipped with a self-diagnosis function.

To localize faults, you must use the Vehicle diagnosis system and technical information - VAS 5052A- or further equipment.

- Connect the Vehicle diagnosis and technical information system - VAS 5052A- or later equipment ⇒ General Information; Rep. gr. 97 ; Cables and wire harnesses in the 16-pin diagnose connector - T16- .

#### 4.4.1 Control unit of the on-board electrical system - J519- (BFM) - assembly overview



#### 1 - Dashboard

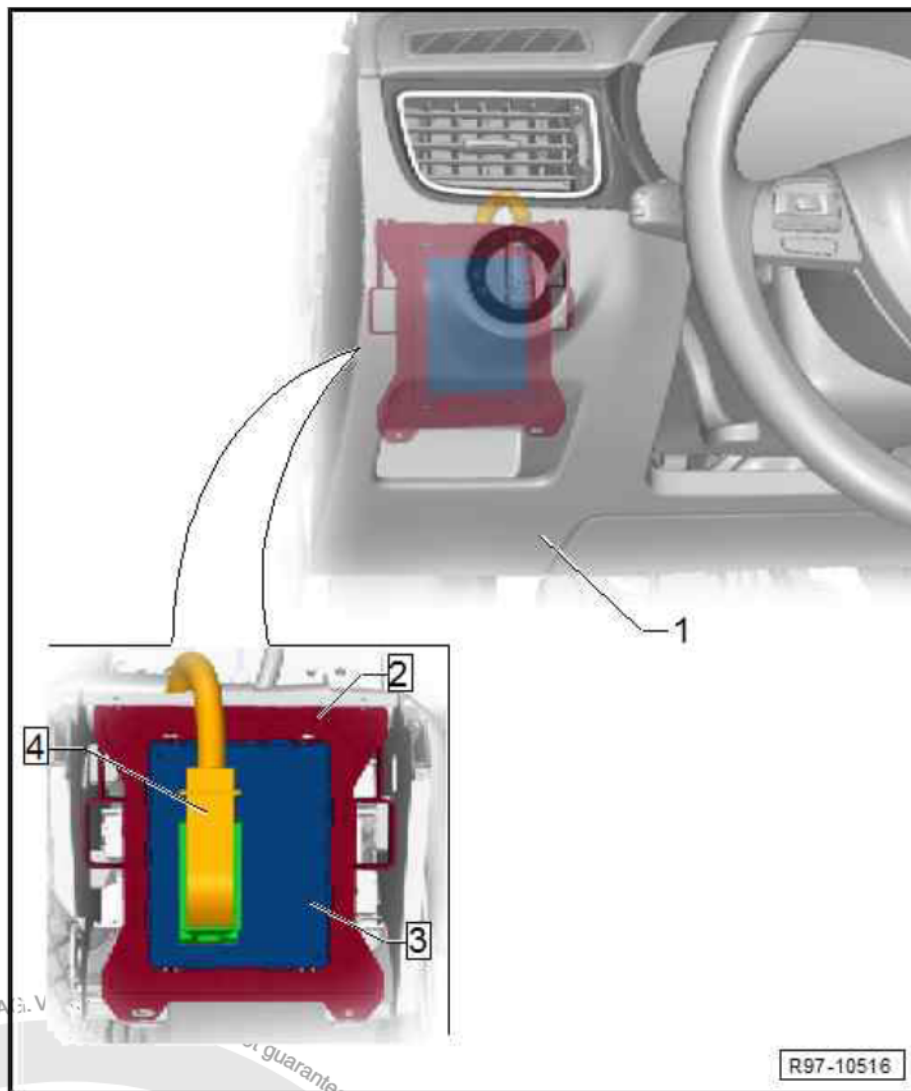
- ☐ Remove and install ⇒  
Body - Internal assembly works; Rep. gr. 70 ;  
Lining / insulation .

#### 2 - Unit support

#### 3 - Control unit for the on-board system - J519- (BFM)

- ☐ Remove and install  
⇒ [page 181](#) .

#### 4 - Connector



### 4.4.2 Control unit of the on-board electrical system - J519- (BFM) - remove and install



#### Note

*For illustration purposes, remaining harnesses and relay were not depicted.*

#### Removal:

Turn off the ignition, all the electrical devices, and remove the key from ignition.

- Disconnect the Battery - A- ⇒ [page 1](#) .





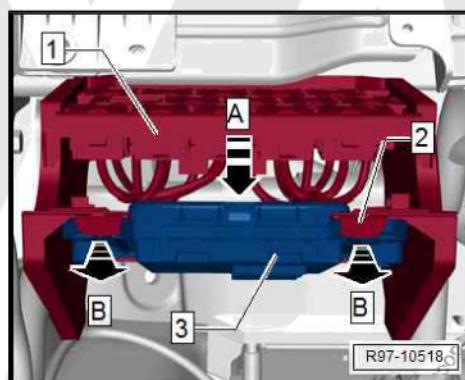
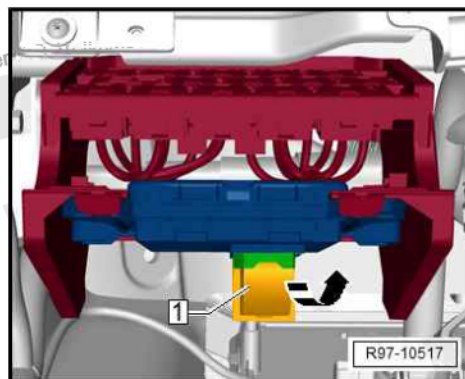
- Access connector -1- through the lower part of the dashboard and disconnect it by releasing its respective lock, as per -arrow-.



**WARNING**

*Locks -2- are fragile. Therefore, carefully press locks in order to prevent damages.*

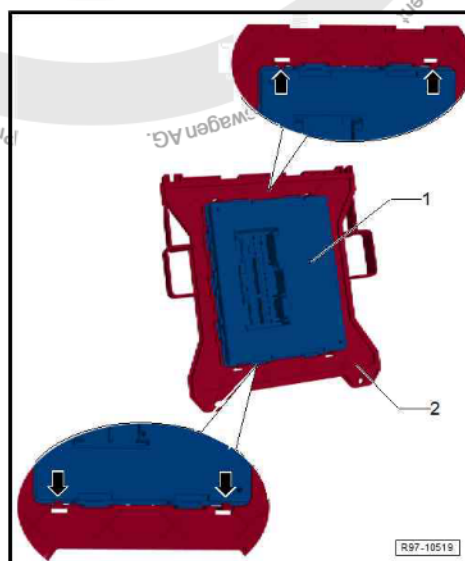
- Carefully press locks -2- as per -arrows B-.
- Remove the Control unit of the on-board system - J519- -3- from support -1- by pressing it according to -arrow A-.



- Press the locks -arrows- to remove the Control unit of the on-board system - J519- -1- from its respective support -2-.

**Installation:**

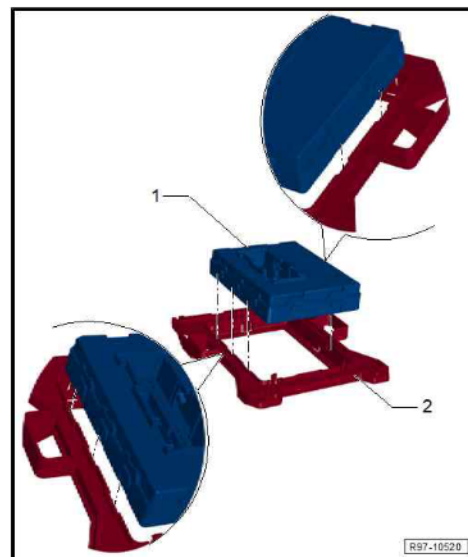
- Installation is performed in reverse sequence to the removal, considering the following:







- Install the Control unit of the on-board system - J519- -1- in its respective support -2-, minding the fittings in detail.



- Install the Control unit of the on-board system - J519- -2- in its support (relay support) -1-.



Note

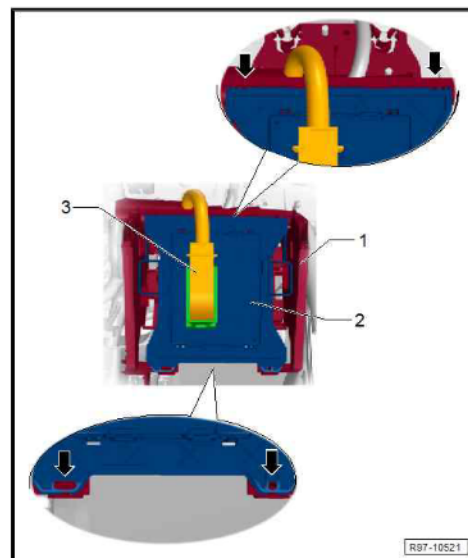
*Mind the fittings indicated by -arrows-*

- Engage the connector -3-.



Note

- ◆ After installing the new Control unit for the on-board system - J519- , it is necessary to perform its coding
- ◆ For coding, using System diagnostic vehicular and Technical Information - VAS 5052A- or further equipment ➔ General information; Rep. gr. 97 ; Cables and harnesses



## 4.5 Control unit for the on-board system - J519- (BCM)

Control unit to on-board electrical system - J519- located behind the relay support.

Locating defects and indicating faults:

Control unit to on-board electrical system - J519- is equipped with a self-diagnosis function.

To localize faults, you must use the Vehicle diagnosis system and technical information - VAS 5052A- or further equipment.

- Connect the Vehicle diagnosis and technical information system - VAS 5052A- or later equipment ➔ General Information; Rep. gr. 97 ; Cables and wire harnesses in the 16-pin diagnose connector - T16- .

### 4.5.1 Control unit of the on-board electrical system - J519- (BCM) - assembly overview



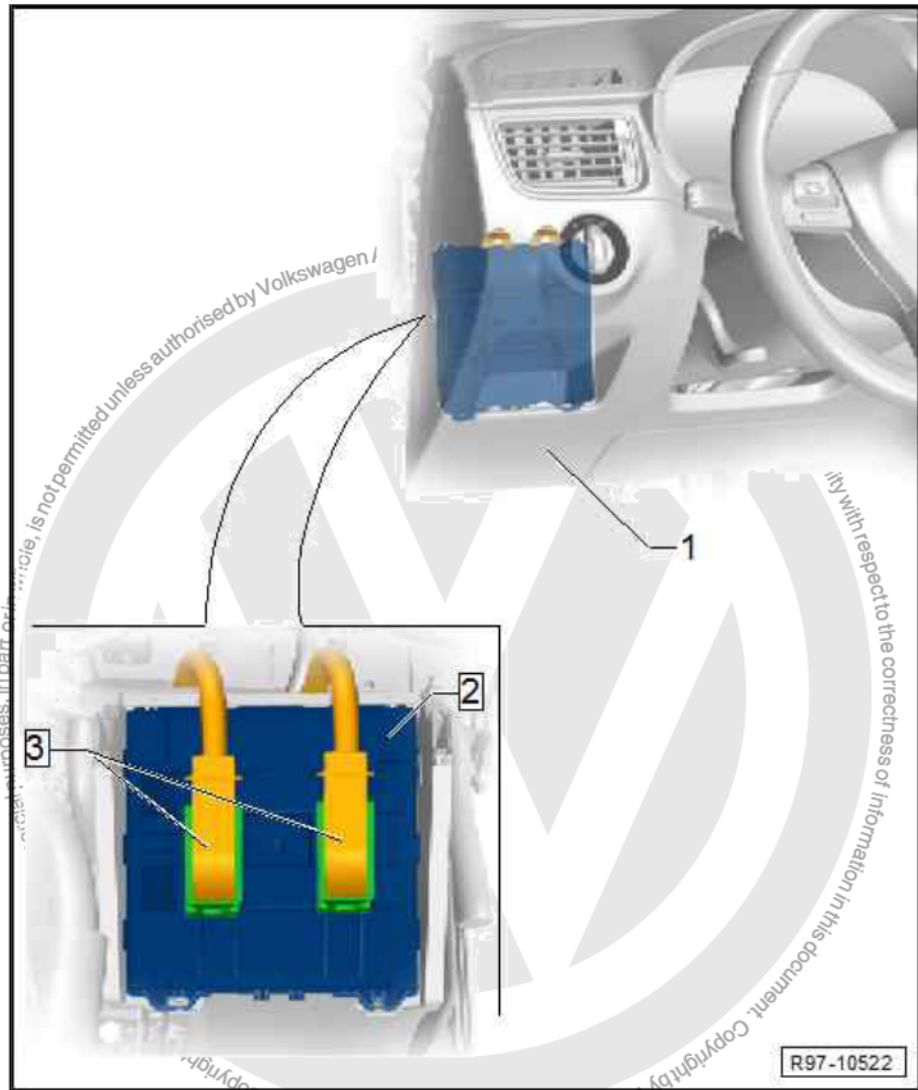
1 - Dashboard

- ❑ Remove and install ⇒  
Body - Internal assembly works; Rep. gr. 70 ;  
Lining / insulation .

2 - Control unit for the on-board system - J519- (BCM)

- ❑ Remove and install  
⇒ [page 184](#) .

3 - Connectors



#### 4.5.2 Control unit of the on-board electrical system - J519- (BCM) - remove and install



Note

*For illustration purposes, remaining harnesses and relay were not depicted.*

Removal:

- Turn off the ignition, all the electrical devices, and remove the key from ignition.
- Disconnect the Battery - A- ⇒ [page 1](#) .



- Access connectors -1- through the lower part of the dashboard and disconnect it by releasing its respective locks, as per -arrows-.



**WARNING**

*Locks -2- are fragile. Therefore, carefully press locks in order to prevent damages.*

- Carefully press locks -2- as per -arrows B-.
- Remove the Control unit of the on-board system - J519- -3- from support -1- by pressing it according to -arrow A-.

**Installation:**

- Installation is performed in reverse sequence to the removal, considering the following:

- Install the Control unit of the on-board system - J519- -2- in its support (relay support) -1-.



**Note**

*Mind the fittings indicated by -arrows-*

- Connect connectors -3-.



**Note**

- ◆ *After installing the new Control unit for the on-board system - J519- , it is necessary to perform its coding*
- ◆ *For coding, using System diagnostic vehicular and Technical Information - VAS 5052A- or further equipment ⇒ General information; Rep. gr. 97; Cables and harnesses*

